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DETROIT

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Plastic Cabinet For Refrigerator Planned By Ford

Auto Manufacturer Has No Marketing Plans For New Product

DETROIT—Henry Ford plans to enter the household refrigerator business with an all-plastic cabinet. How, when, and where he will get into the business—whether as a supplier of plastic cabinets to other manufacturers, or whether as a full-fledged maker and distributor of Ford refrigerators—remains to be seen.

As matters stand now, Ford's engineers simply know how to make plastic refrigerator cabinets, and have been directed to go ahead and do so.

This cabinet will be produced from the same material, and by the same methods, as that used for the production of the first all-plastic (except for the motor and chassis) automobile, which Ford's engineers presented to him last week.

Ford is said to be seeking new products for production and sale by his organization after the war, "to make use of all these big buildings." The success of the Nash-Kelvinator merger, of General Motors' Frigidaire division, and of Chrysler's Airtemp division, is said to have favorably disposed him toward the refrigeration and air conditioning fields.

The Ford plastic refrigerator will be fabricated by the "adhesion molding" method, in which parts are "pre-formed" by suspending the plastic material in a solvent, and then depositing it on a porous mold within which a vacuum has been created.

After impregnation with a low-cost soybean binder, the part is then finished between male and female dies under pressure and precise heat treatment.

The plastic itself is composed of

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Henderson Requests 'No More Raises' In Refrigerator Prices

WASHINGTON, D. C.—In a letter sent last week to 16 manufacturers of household refrigerators, Leon Henderson, administrator of the Office of Price Administration and Civilian Supply, requested that no additional advances in the prices of household refrigerators be made without prior discussion with his office.

Noting that a considerable rise in prices had occurred during recent months, the letter pointed out that a continuation of such upward trends in the refrigerator and other industries would inevitably result in inflation and "demoralization" throughout the economic system.

The letter declared that OPACS was studying recent price increases "with a view to determining their justification," but there was no suggestion as to what action might be taken if the price boosts were found to be unjustified.

The 16 refrigerator firms to which the letter was sent were said to represent approximately 97% of the output of the industry. Text of the letter follows:

"June 23, 1941

"Gentlemen:

"We are deeply concerned over the fact that the price of refrigerators has risen considerably during recent months. If such price increases con-

(Concluded on Page 16, Column 2)

Frank Pierce Elected Nash-Kelvinator Vice President; Lawson Also Moves Up

FRANK R. PIERCE

DETROIT—A new post, that of vice president in charge of sales, has been created by Nash-Kelvinator Corp., and Frank R. Pierce, formerly general sales manager of the corporation's Kelvinator division, has been elected to fill it, George W. Mason, president, announces.

Mr. Pierce will direct the sales, advertising, and service activities of both the Kelvinator division, manufacturer of electric refrigerators, ranges, commercial refrigeration products, and ice cream cabinets, and the Nash Motors division, automobile manufacturer, Mr. Mason said.

At the same time, several other advancements in the executive organization of the Kelvinator division were announced by Mr. Pierce. Charles T. Lawson, who has been sales manager of household appliances, will succeed Mr. Pierce, and will have the title of general sales

(Concluded on Page 16, Column 3)

New Association of Unit Manufacturers Is Being Considered

CHICAGO—A group of manufacturers of commercial condensing units met June 24 and 25 at the Edgewater Beach hotel here to study the advisability of forming a permanent organization of manufacturers of such equipment for the purpose of studying and promoting the use of commercial standards in their industry.

This meeting followed preliminary informal discussions of the subject during a meeting of equipment manufacturers last month at French Lick, Ind.

A further meeting has been scheduled for Aug. 5 at the Palmer House hotel in Chicago, at which time committees appointed at last week's meeting will report their findings on the nature and shape of the proposed organization and the type of work on standards that needs to be done.

Feeling of those attending last week's sessions was that the group was definitely on its way to becoming organized on a permanent basis.

With the Office of Production Management actively encouraging adoption of commercial standards, these condensing unit manufacturers who are active in this organization movement believe that the time is well ripe for cooperative activity on this matter.

The OPM is encouraging adoption of commercial standards as a measure to preserve labor and materials in the present defense emergency, and also as a protection to consumers.

Any standards adopted, it is said, will follow closely the patterns set by the commercial standards section of the Bureau of Standards division of the U. S. Department of Commerce.

Fed. Power Commission Declares an Emergency In 8 Southeast States

WASHINGTON, D. C.—The Federal Power Commission on Saturday night, June 28, formally declared the existence of a power emergency in the southeastern part of the United States and called for immediate curtailment of street and ornamental lighting and of all non-essential and non-defense uses of electricity in the eight states affected.

The declaration applied to Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Missis-

(Concluded on Page 16, Column 2)

Frozen Foods Show Big Advantage In Army Maneuvers

WASHINGTON, D. C., June 28—Quick-frozen products, delivered under refrigeration, proved themselves in a "new method of supplying fresh meat to soldiers in the huge maneuvers in Middle Tennessee recently participated in by 65,000 men of the U. S. Army," the Quartermasters Corps announced today.

Quick freezing and elimination of bones are chief points in the method. The same plan will be used to supply 325,000 men in Louisiana in the August and September war games.

Beef was used in the test. All bones were removed and the meat quick frozen under temperatures ranging from —30° to —40° F. Delivered under refrigeration, it took the meat 24 hours to thaw.

A saving of 60% in storage space was one of the main achievements of the new plan, the Quartermasters Corps announced. It also was found that the meat, delivered, was cheaper by approximately a cent a pound under other methods.

During the 37 days of war games the Quartermasters Corps delivered and served without a serious hitch 2,334,390 pounds of meat; 250,000 pounds of butter; and enough cheese for 1,353,000 sandwiches.

News Issues Spanish Service Manual For Latin America

To help the cause of better business and cultural relations between the United States and Our Good Neighbors in Central and South America, the Business News Publishing Co. has just issued "Refrigeracion Domestica," a complete Spanish translation of the famous Master Service Manual on Household Refrigeration.

This is now being offered to all Latin American readers of AIR CONDITIONING & REFRIGERATION NEWS (see advertisement on page 11 of this issue) and will be made avilable to all who can use it in Spanish-speaking nations.

It is the contention of the NEWS that permanent goodwill can be acquired by the United States through sending Latin America its best industrial products, and through keeping those products in excellent working order. "Refrigeracion Domestica," it is hoped, will do its bit toward developing that goodwill.

Army To Convert 12,000 Iceboxes in Camps To Mechanical Refrigeration

'Will Result In a Reduction In Amount of Food Lost Through Spoilage,' Says War Dept.

Ice To Be Used Only For Table Service In These Camps

(The following is printed verbatim from an official statement made by the Office of the Quartermaster General, United States War Department, Washington, D. C.)

WAR DEPARTMENT
OFFICE OF THE QUARTERMASTER GENERAL
WASHINGTON

SOLDIERS ARE ASSURED COLD AND FRESH FOODS

The War Department announced today that an extensive program is getting under way through the Quartermaster Corps which will assure adequate refrigeration facilities for soldier's food, to keep it in the best possible condition for serving to them.

This program, which has been prepared with the help and the cooperation of the ice industry, includes four major projects: (1) The conversion of nearly 12,000 ice boxes into mechanical refrigerators; (2) The construction of a number of ice docks; (3) Supplying ice chests for some 7,500 mess halls; and (4) The construction of eight ice plants.

The program is the result of an extensive study of the ice and refrigeration requirements of the Army posts, camps and stations; of the availability of ice for them from commercial sources; and of the prices which would have to be paid for commercial ice. As a result of these studies, definite changes in the former methods of Army refrigeration are to be made.

First will be the conversion of ice boxes to mechanical refrigerators in most Army camps. This will result in a marked reduction in ice requirements because only ice for table use will be required. It will also result in much more satisfactory refrigeration and a reduction in the amount of food lost through spoilage.

Ice for table use, and for refrigeration in camps where the ice boxes will not be converted, will be purchased from commercial sources wherever adequate supplies are available. To insure the most favorable delivered prices for ice, the construction of central ice docks will be required in many camps. Block ice will be delivered to the docks and distributed to mess halls in blocks or as crushed ice.

The exact number of ice docks to be constructed will be based upon the differential between the cost of ice delivered to each mess hall or to a central point, and will vary greatly with local conditions. When they are included in the program, one ice dock will be provided for camps with 10,000 to 35,000 soldiers and two docks will be provided for larger camps.

To store cracked ice in the mess halls until it is used requires the procurement of ice chests. These

(Concluded on Page 4, Column 5)

N.R.S.J.A. Will Push Sales Manual Plan

CHICAGO — Definite decision to proceed with publication of a sales manual for use by salesmen of the member firms as one of five projects added to the 1941 program was made by the board of directors of the National Refrigeration Supply Jobbers Association at its May meeting.

Preparation of articles for the manual will be assigned on a volunteer basis, the copy being subject to revision, according to Fred B. Hovey, executive secretary.

Two surveys sponsored by the association are now nearing completion. In order to ascertain the amount of supplies now on hand and those reasonably to be anticipated, the group is conducting a survey among manufacturers.

Made so as to determine the relative profits of jobbers selling refrigeration supplies exclusively and those wholesaling other lines, another survey is now practically completed. This survey is a supplement to one on the cost of business operations, and which aroused such interest that the

(Concluded on Page 9, Column 1)

Treasury Recommends 10% Excise Tax

WASHINGTON, D. C.—A 10% excise tax on mechanical refrigerators and radios seems virtually certain under the $3,600,000,000 defense tax bill now practically completed by the House Ways and Means Committee. The Treasury Department has notified the committee that it approves such a tax.

The committee is attempting to

(Concluded on Page 4, Column 5)

May Household Sales Reach 460,000 Units

DETROIT—Breaking another all-time monthly mark, world shipments of household electric refrigerators during May totaled 460,000 units, bringing the five-month mark for 1941 to approximately 2,172,000 units, according to estimates by the NEWS.

May shipments were an increase of about 12.5% over those for the same month of 1940, which totaled 399,000 units, while the five-month total was about 35% higher than for the corresponding period of last year.

World shipments by 12 members of National Electrical Manufacturers Association during May amounted to 424,636 units, against 379,675 in the same month of 1940, and five-month Nema shipments were 2,020,-237 units, against 1,505,911 in the 1940 period.

Rate of gain over 1940 dropped considerably in May as compared with previous months, but this probably reflects some tightening of materials more than it does a slackening of demand, since most retailers are selling the units almost as fast as they are able to obtain them, and manufacturers are struggling to fill orders from the field.

Sales Boom as

Personal Postcards From Salesmen Tap Resources In Dealer's 5,000 Users

ST. LOUIS—Systematic use of its 5,000 users has enabled May Appliance Co. here to build up one of the largest volumes for an independent dealer in this area—a total of 712 refrigerators in 1939 and 1940, and more than 300 washing machines and 290 radios in each of the two years.

The firm, a General Electric dealership, is headed by E. W. May, and has been operating for eight years. Eight "outside" salesmen are employed, each of whom has spent at least ten years in the appliance field. They receive an average of between $250 and $300 a month in commissions.

Although these salesmen spend little time on the floor, only six hours a week, that time is profitably used through a "different" direct-mail program to sell appliances and find additional prospects. Floor time is rotated. The salesman on the floor on Monday of one week appears on Tuesday of the second, and Wednesday of the third.

There is plenty of floor traffic for the inside men, due to the direct-mail plan which brings in as many as 50 prospects daily. All the salesmen spend their spare time writing penny postcards to prospects chosen from the store's list of 5,000 former customers. The store issues these cards in lots of 100 to every salesman each week.

Writing in an informal manner completely free from the usual "form letter" style, the salesman informs his past customers that he will be on the floor on a certain day and asks them to come in to receive a small gift from the company.

Gifts include thermometers, pot-holders, screwdrivers, plastic novelties, biscuit tongs, ashtrays, cigarette lighters, and salad bowls. Purchased in lots of thousands, these items cost about 5 cents each. Last year the firm spent $1,000 for these gifts.

The firm's name, Mr. May's name, and the lines of appliances handled are shown prominently on the gifts. Salesmen are given 50 of these items with no "strings" attached, and can hand them to anyone who enters the store.

Response to the postcard gift offers is excellent, Mr. May says, frequently reaching 50%. The salesman seeks two things from the customers—add-on business and/or names of prospects. Every visitor is usually willing to have a washing machine, radio, etc. demonstrated to her, which often results in a sale.

The fact that the firm collects payments in the showroom for financing through a local bank is carefully explained to the visitor, for this has been a source of convenience and goodwill for customers.

While in the store each salesman takes his visitors on a tour of the building, pointing out the washing machine department, used appliance department, service shop, and other features. After this trip, which requires about 15 minutes, the salesman asks for prospect names and presents the gift.

Contests In Peak Season Make Sales Even Better

KANSAS CITY, Mo.—Staging a continual series of sales contests during the summer months when business is at its peak is the method used by one dealership here not only to increase its own earnings but those of its six salesmen. Emphasizing sales contests when volume is at its best for refrigerators, gas ranges, and home laundry equipment is the idea of Boyd Cousins, owner of the Kansas City Stove & Electric Co.

"Salesmen can do a better job when the season is right," Mr. Cousins reasoned, "than during off months when sales contests actually work an unfair hardship on them. Consequently, when business is already good, incentive plans make it even better for us."

One of the most effective of these is one suggested by the salesmen themselves, an "Order a Day" contest running six weeks starting in June. A $75 set of golf clubs will be given to the salesman turning in an order a day for at least 30 consecutive days on a refrigerator, range, or home laundry, the latter two specialties of the firm. Thus, the salesmen strive to equalize their sales and work longer hours when it appears no business is in sight.

At the contest's close, the winner plays a round of golf with the low man acting as his caddy.

'Low-Price Plus' Sells Dealer's Range Quota In Only 4 Months

GRAND JUNCTION, Col. — A "low-price models plus" selling policy on electric ranges has enabled Barnell Brady, department manager for Kendall Electric Shop, Hotpoint dealership here, to sell his company's entire 1941 range quota in the first four months of the year—with most sales in the higher-price brackets.

Starting with the lowest-price model, Mr. Brady first sells electric cookery, pointing out that the customer can enjoy this appliance for a $7.15 down payment and $4.76 per month. When the prospect is all ready for signing, Mr. Brady steps to the next highest-price model, points out the "plus" features, and shows that for 70 cents more down payment and actually 5 cents less per month, this model may be purchased with all its extra convenience features.

Through this step-by-step procedure, he leads the prospect up the line by merely weighing the use value, pride of ownership, convenience, and appearance features against a few cents more per month or one or two more payments.

"I have never yet sold a top-price range," Mr. Brady declares. "I have always sold low-price models plus."

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VALVES
● The service life of the Triple Seal Diaphragm Valve is greatly prolonged, owing to its method of diaphragm operation. The diaphragm never travels below its normal center, thus eliminating oil can or "snap" action and consequent fracture.
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A single turn only is necessary to open or close it. Write for literature.
Valves are furnished in two-way, three-way, and angle type—flared or solder type ends—and in complete range of all necessary sizes.
MUELLER BRASS CO.
PORT HURON, MICHIGAN
ORDER FROM YOUR JOBBER

'Shades of Customers' Help In Convincing 'Slow' Prospects

GREEN BAY, Wis.—"Shades of pleased customers" are more than just figures of speech in LaPlant's, Hotpoint appliance dealership here—they're very solid, ivory-colored window shades, installed on special racks just inside the front door, each carrying a list of all the people who have purchased appliances from the store—names and addresses, one shade for each appliance line.

When a hard-to-close prospect is just about to leave the store with the customary "I'll think about it," the LaPlant salesman can pull down the shade listing customers of the particular appliance in question, ask "Do you know any of these people?" and begin again his story of the benefits of the appliance.

If the prospect recognizes any of the names on the shade, the salesman notes it. Then, after the prospect has gone, he phones these users and enlists their help in closing the sale, offering them a gift if a signed order is obtained.

Small Appliances Prove Best User Rewards

ST. LOUIS—"Instead of paying users rewards of $5 bills for good prospects, give them small electrical appliances. And instead of spending salesmen's time in running down such leads, let the user do it for you." That is the system which has insured a full-size list of good prospects year after year for the C. F. Kroemeke Co., Frigidaire dealership here.

The Kroemeke company, one of St. Louis' oldest major appliance firms, has had 10 years' experience in building up prospects, and has found that "user rewards" are one of the most consistently effective plans.

"First, we never pay a user for a prospect or customer with a $5 bill, such as is usually the custom," Mr. Kroemeke explained, "because the customer will spend her $5 and forget all about it immediately afterwards. Instead, we reward each user with a small electrical appliance approximating $5 in value, which she will use daily, and which will remind her that she can earn more appliances by supplying us with customers."

Each spring the Kroemeke company mails out a business-reply card to 2,000 users—1,000 from each of the two stores. Calling the user's attention to the fact that there are probably many of her friends who are not enjoying the benefits of appliances as she is, the front half of this card asks her to jot down the names of three potential customers, and mail it to the sales office. From this annual mailing, Kroemeke gets over 60% returns.

No Mere Paint Job Could Stymie This Range Sale

BLADENBORO, N. C.—"I won't let my husband put a new electric range in this house until he has both the kitchen and dining room painted!" That was the adamant objection voiced to B. O. Ward of Bridger Corp. here by the wife of a man to whom he had practically sold a range.

Undaunted by this obstacle, however, Mr. Ward proceeded to go ahead on his own initiative and with $5 worth of paint and $10 worth of labor satisfied the housewife's demand for kitchen redecorating. Then he proceeded to complete the range sale—adding about 70 cents a month to the range payments to cover this "special service."

'For Men Only' School Takes Up Cooking

NEW ORLEANS — A "Cooking School for Men Only" was held here recently by Walther Brothers, appliance distributor for southern Louisiana, with Range Manager Forest Hall conducting an all-day session for range salesmen in Walther Brothers' recently-completed model kitchen. Fifty-two retail salesmen from dealerships in New Orleans and suburbs made up the class.

Do You Know These Fundamentals of Appliance Advertising & Merchandising?

Just published by Business News Publishing Co. (publisher of Air Conditioning & Refrigeration News) is a new book "Appliance Advertising & Merchandising." (Price: $2.00.) Written by R. E. Mangan, who for the last 10 years has been advertising manager and merchandising expert for one of the largest appliance distributing firms on the west coast, the book is full of down-to-earth information on making advertising and promotion methods pay out.

Parts of "Appliance Advertising & Merchandising"—such as that below—will be published in the News from time to time, to give readers the benefit of some of Mr. Mangan's stimulating thinking, but primarily to create a desire on the part of the subscriber to get and read this very helpful book.

BY R. E. MANGAN

(From Chapter 11 "Merchandising Activities" of the book, "Appliance Advertising & Merchandising.")

Clearance Sale advertising to new, current models. Good salesmanship can swing these prospects brought in by the and price buyer who wants something better than the usual price. new merchandise. And it has strong appeal to the bargain hunter your non-current merchandise, and thus releases your capital for A Clearance Sale advertisement like this has a double value. It moves

WHY, WHEN, AND HOW TO HOLD "SALES EVENTS"

Used merchandise that piles up in the back room, and noncurrent models that hold down space on the display floor, get less valuable every day they remain unsold . . . and they represent frozen capital. Close them out. Keep your money and your merchandise moving.

For example, you are faced with a problem at the time new models are announced. You can't afford to rob your floor stock in an effort to pull down inventory. That will hurt your sales for a month or so before the new models are released. And your lost sales will more than offset the small loss on a few carry over models. Unless you virtually stop doing business for a while, you will carry over a fairly substantial stock that will immediately become non-current.

You must expect to take this inventory loss. It is part of the cost of doing business. Take your loss immediately, and get rid of obsolete models quickly. Remember, the mark-down necessary to move this non-current merchandise increases the longer you wait.

Therefore, your first activity of the new year should be a Clearance Sale to clean up your stock. This will hold down your loss, even though you carry a good display stock right up to the time new models come out. And it will release your capital at the time you need it to buy new models.

During the course of the year you may get loaded up with used merchandise. Don't let it sit around. Close it out. With the right prices and the proper promotion a Clearance Sale will clean up your old stock quickly.

Women Must Understand Air Conditioning

Sales To Home Depend on Housewife's Knowing What Cooling Can Do, Miss Ingels Says

BOSTON — Unless the average woman understands its functions and value, air conditioning will never become an important factor in the American home, Margaret Ingels, engineering editor of Carrier Corp., told the second annual Air Conditioning Institute in advocating the launching of an educational campaign for this purpose. Miss Ingels, said to be the first woman air conditioning engineer, outlined such a campaign before the institute held here recently at Massachusetts Institute of Technology.

The home-maker must be made aware of air conditioning, what it is, and what can be expected of it, Miss Ingels asserted. Points to be driven home, she said, are: The health phase of cleaned air; what air conditioning equipment must contain to perform the four functions of cooling, controlled temperature, relative humidity, circulation of air, and cleaning or filtering of air; and effects of relative humidity on comfort.

"Knowing about air conditioning creates a desire to have air conditioning," the engineering editor said. "Cleanliness of air, an important advantage of air conditioning, appeals to the home economist whether she is the home-maker, the hospital dietitian, or the department store stylist.

"But it is the health phase of cleaned air that is most important. When Pasteur was trying to establish his germ theory for transmission of diseases, he found that he could not get a germ-free air unless he obtained a dust-free air. Part of his tests were made high in the Alps where there was little or no dust. The home-maker is already interested in clean air. This interest increases, however, with the appreciation that less dust means fewer germs."

An explanation of the effects of relative humidity on comfort should be brought home to every housewife, Miss Ingels said.

"The housewife is familiar with the importance of temperature in relation to comfort. However, she often does not know the effects of relative humidity. Appreciating that the discomfort of a summer day may be 'not the heat but the humidity' she will readily understand that a room in winter, uncomfortable at 70° to 72° F., may be due 'not to the lack of heat but to the lack of humidity.' The need of adding moisture to the air in winter and removing it in summer are easily recognized as requirements for comfort."

The benefits of air conditioning are not limited to cleanliness with its reduced decoration bills and avoidance of the turmoil of having decorations done, or to less wear from cleaning of draperies, upholstery, and rugs, Miss Ingels said.

"It also means that no windows are open when a sudden storm comes up; no ruined plaster and furnishings from the rain blowing in; no undue mussing of chair covers; no sticky perspiring hands to mark whatever they touch. Comfortable people—not fagged out or enervated with the heat of summer or from combating the cold, dry air in winter —are found in the air conditioned home."

Pull Down the Shades!

Home Cooling Capacity Could Be Cut In Half If 2 Shades Cover Windows, Research Shows; 10% Reduction In Winter Fuel Costs Possible

NEW YORK CITY — Window shades can effectively reduce infiltration of heat in air conditioned houses in summer, and likewise cut heat loss through windows in winter, investigators at the Armour Research Foundation found in experiments on a test house.

A single cloth shade, fully drawn over each window of a room during the hours it is exposed to the sun, will reduce heat intake by about 45%, while a pair of cloth shades will cut intake 65%, it is reported. Heat loss in winter can be reduced 40% by a single shade, 54% by two shades, with a possible saving of 10% in the fuel bill.

To make the tests experimenters constructed a heavily insulated house, 10 feet x 10 feet x 8 feet, in a room which was kept at constant temperatures. The test house contained a single double-hung window, each sash glazed with one pane of 24 inch x 24 inch single-strength glass.

Just outside the window in a box-like structure were placed 72 electric lamps to simulate the heat of the sun. A current of cool air flowing between the lamps and the window permitted the radiant heat from the lamps to pass through the window but removed the sensible heat and protected the glass from breaking. Heat intake through the unshaded window was measured at 320 B.t.u. per square foot of glass surface.

Heat intake with a single shade half drawn was three times as much as with the shade fully drawn, experiments showed. Two shades, fully drawn, produced a 65% reduction in heat intake. Reduction of heat intake varied with the color of the shades, the lighter shades, especially white, reflecting much more heat than the darker shades.

Based on data obtained in these tests, calculations made by experimenters at Armour Research Foundation for a south-facing normally furnished living room, 18 feet x 20 feet x 10 feet, with a window area of 70 sq. ft. show a possible reduction in cooling capacity required from two tons to less than one ton, provided two shades are used.

Heat-absorbing capacity of the room and its contents was calculated at 2,980 B.t.u., with 22,400 B.t.u. per hour entering unshaded windows. An early morning temperature of 70° F. would rise to about 100° F. if windows were unshaded, assuming a sufficiently high outdoor temperature. With two cloth shades drawn over the windows the room temperature would rise to less than 81° F.

If the room were held at 70° F. by an air conditioning unit, capacity needed without shades being drawn would be nearly two tons (22,500 B.t.u.), the engineers estimated. Double shades on the windows during sunlight hours would reduce the capacity required to less than a ton.

Window shades can be an important factor in winter heating, the investigators believe. Here the problem is not one of color but of texture of the cloth material and close fitting between the shade and the frame of the window.

A refrigerating coil was placed outside the window of the test house to simulate winter conditions. The coil was held at 10° F. while a temperature of 80° F. was maintained in the house by an electric heater. With the window unshaded heat leakage was calculated at 806.4 B.t.u. per hour. A single shade fully drawn cut the heat loss 40%, two shades, 54%.

If the living room previously mentioned were held at 70° F., the outdoor temperature being 0° F., 169,344 B.t.u. would be lost through unshaded windows per day. However, about 75,000 B.t.u. could be saved each day, the engineers calculate, if a cloth shade is half-drawn over each window during daylight hours, and two cloth shades fully drawn during hours of darkness.

That one-third of the heat loss through the windows could be saved by the proper use of window shades, was considered a conservative estimate by investigators. This would mean that about 10% of the fuel-generated heat available for house heating could be saved.

BOMB DODGING

Reinforced Concrete Garage-Type Buildings Advocated For Air Raid Shelters

BOSTON — Reinforced concrete garage-type loft buildings were advocated as air raid shelters by Walter L. Fleisher, president of the American Society of Heating & Ventilating Engineers in speaking before a recent combined meeting of the Air Conditioning Bureau of Boston and the local ASH & VE chapter.

Mr. Fleisher advocated "above ground" shelter in place of the underground type now used in London.

The ASH & VE president visited the principal cities of France, Germany, and England in 1938 and 1939—when he was consulted by British authorities on the construction of air raid shelters. His talk was illustrated with slides, showing the crowded condition of English shelters at the present time.

"Ventilation is the basic thing in air raid shelters," he said, "and you do not get proper ventilation in underground shelters. Most of those in London are very bad, and even with many improvements over the earlier shelters do not provide sufficient air per person, which should be at least 400 cubic feet per hour.

"The early British shelters allowed only 50 cubic feet per person per hour, and no consideration was taken for the rise in temperature and humidity from the human beings using them."

Mr. Fleisher has found that the middle stories of high buildings are the safest, even from direct bomb hits, provided people stay away from windows. The upper floors are safest from flying bomb fragments, which have caused many British casualties. Mr. Fleisher advocates the construction of multi-storied garages, with reinforced concrete roofs, which could be used to relieve the automobile parking problem after the war.

Underground shelters do not afford protection from poison gas, and 4,000-pound bombs will penetrate 15 inches of concrete.

Many Londoners crouch in basements and subways, in as much danger of being buried if these cave in, as they are of being hit by a bomb. In Mr. Fleisher's opinion the subways in this country are useless as air raid shelters, because they are too near the surface, and a direct hit on one of them would smash in the roofs, burying the occupants.

Mr. Fleisher feels that in case of an air raid, it is safer to stay in a modern skyscraper than to try to get out of it. Up to the present time no bomb has penetrated to the center floors of a large building, and at this point people in the building are fairly safe from flying fragments from the ground, and from poison gas, which usually hugs the earth.

The speaker warned the engineers present that action on air raid shelters must soon be taken in every city and industrial center in the country.

Air Conditioner Keeps Chinchillas Cool

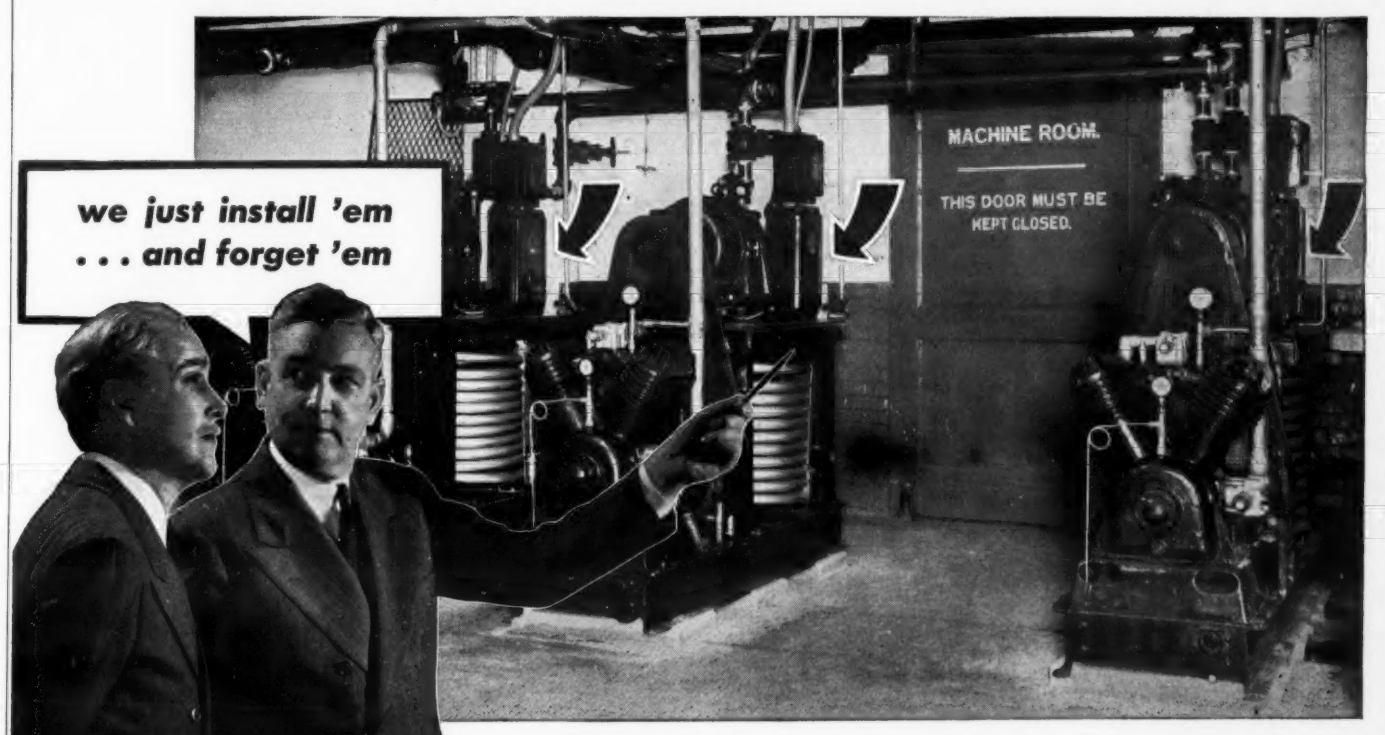
BUENOS AIRES, Argentina — Milady sometimes keeps warm with chinchilla furs. So do chinchillas. In fact, the chinchilla's natural habitat is some 13,000 feet up in the Andes mountains where it's cool and dry.

So when the Ministry of Agriculture of the Argentine republic brought a pair of the animals from the government nursery down to this sea level city to display at a recent exhibition of the national fur industry, artificial cooling had to be supplied. A General Electric room cooler did the trick.

A cage was built on top of the room cooler. To prevent harmful air currents, conditioned air was discharged at the front and conducted between double glass to the top of the cage, where it was distributed uniformly throughout the cage by means of openings in the double ceiling. Air was returned to the conditioner through a duct located at the back of the cage.

The conditions, closely resembling those of the mountains, were from 59° to 62.6° F. with a relative humidity of 60%.

General Electric, S. A., an affiliate of International General Electric Co., supplied the conditioner.



"There's no maintenance on these Solenoid Starters"

"Starter trouble used to cause many of our motor shutdowns . . . but not any more," said the plant engineer.

"How did you fix it?" asked the president.

"We changed over to Allen-Bradley solenoid controls."

"Why did that cure the trouble?" inquired the president.

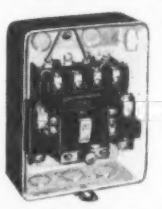
"Because these starters have double break, silver alloy contacts," replied the plant engineer. "They never need any attention. We just install 'em . . . and forget 'em. There's no maintenance of any kind on 'em."

This enthusiastic user of Allen-Bradley solenoid controls also could have added that there are no bearings, pivots, pins, or hinges to stick . . . no flexible jumpers to break . . . no concealed wiring. These dependable starters do not "kick out" even if there are considerable line voltage fluctuations.

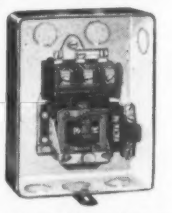
White interiors, many knockouts, and ample wiring space are features that please the electrician. Complete information on Allen-Bradley trouble-free refrigeration and air-conditioning controls will be sent on request.

Allen-Bradley Company, 1313 S. First St., Milwaukee, Wis.

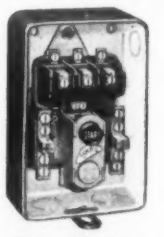
A-B Controls are good for Millions of Operations



Automatic Polyphase Starter Bulletin 709, Size 0— Across-the-line starter for squirrel-cage motors.

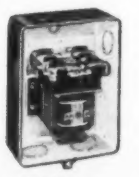


Single-Phase Starter Bulletin 709SP—Solenoid type switch for self-starting single-phase motors.



Manual Starter Bulletin 609—Size 0 Across-the-line starter. Two breakers protect against overloads.

Pressure Control Bulletin 836—Precision switch for both pressure and temperature control. Rugged.



A-C Relay Bulletin 700—A compact, inexpensive, reliable switch rated up to 10 amperes.

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

A-B Allen Bradley Quality

Commercial Refrigeration Equipment Deserves High Priority Number

'Absolute Necessity To Public Health' ---F. M. Bennett

Refrigeration Economics Co., Inc.
Engineers and Manufacturers
1232 Second St., N.E.
Canton, Ohio

Sirs:

We have been told by the Aluminum Co. of America that commercial refrigeration takes a priority rating of B-7, in other words next to the lowest possible rating and that materials required for preservation of public health take a rating of B-3.

Certainly the preservation of foodstuffs is an absolute necessity to maintain public health conditions.

It seems to us therefore that materials required for commercial refrigeration should be given B-3.

F. M. BENNETT,
President

'Industry Must Take Joint Action' ---Tom Evans

Merchant & Evans Co.
2035 Washington Ave.
Philadelphia, Pa.
June 25, 1941

Dear Mr. Taubeneck:

Undeniably the refrigeration industry faces a most serious predicament due to the necessities of National Defense. I favor unrestricted measures for defense and for aid to England without stint. No considerations should weigh in any man's mind against these objectives.

The refrigeration industry plays an important part in the program of National Defense because the fitness, health, and strength of the Nation is served by the industry.

In order that the industry can serve best as tax payer, employer, and earner, its position should be arrayed and presented before the Government.

I make these proposals as a private in the industry's ranks with the idea that you may present them in your next issue and if a favorable reaction is evident, proceed with the thought with such amendments as may appear appropriate.

The following situation is self-evident:

1. That the supply of materials used both directly and indirectly in the refrigeration and air conditioning industry will be progressively restricted during the emergency.

2. That obviously such restrictions will affect the maintenance of refrigeration apparatus in service.

3. That no joint action has been taken by the industry as a whole to present to the Government the **vital necessity to the general welfare of the continuance of the production, distribution, and maintenance** of mechanical refrigeration.

4. That this presentation should be made in Washington by representatives of the different branches of the industry in a joint effort and that a constant liaison be maintained thereafter.

Predicated on these premises, I suggest the immediate formation of a joint committee of the Presidents, or appointed representatives, of the trade associations of the constituent divisions of the industry to meet with other interested individuals as soon as can be conveniently arranged.

I suggest furthermore, that George F. Taubeneck, publisher of AIR CONDITIONING & REFRIGERATION NEWS, because of his acquaintance with all branches of the industry, including manufacturers of household and commercial refrigeration, air conditioning and refrigeration supplies, and also service organizations, organize such meeting, and include among those invited to attend, representatives of other trade publications directly interested.

Time is of the essence, otherwise the industry may find its activities severely curtailed and the national health and economy unnecessarily and unwisely suffering in consequence.

THOMAS EVANS,
President

Divided We Stand . . .

Letters on this page relative to the necessity of the refrigeration industry settling its petty quarrels and getting together to present a United Front at Washington represent only a small portion of the appeals made to the NEWS in this connection.

Telephone calls and personal visits to the NEWS with regard to the priorities situation have been steadily increasing in number. Rumors have been multiplying—ranging from a persistent one that Jerry Jernberg of Mills was organizing a committee (stoutly denied by Jerry), to the one that aggressive Chet Borden of the National Refrigeration Supply Jobbers Association had enlisted the aid of President Roosevelt.

Actually a number of very interesting behind-the-scenes moves have been made by various groups, but as yet, nothing has really happened.

To date, *no priorities number has been assigned to commercial refrigeration.* Household refrigeration, as readers of the NEWS know, has a very poor number, B-7.

As repeatedly stated in editorials in the NEWS, *refrigeration has just about the best story to tell of any "non-defense" industry.* Refrigeration is absolutely vital to the health and welfare of the nation—particularly during times of war.

Tom Evans states the case in the letter printed on this page. Mr. Evans, who was for many years chairman of the Refrigeration Division of the National Electrical Manufacturers Association, has long been active in public life and in industry affairs.

It was he who succeeded in getting the warring factions of the refrigeration industry together during the NRA days, and his leadership in matters pertaining to "the good of the industry as a whole" has long been recognized.

The different associations involved (in alphabetical order), include the Air Conditioning & Refrigerating Machinery Association, the Commercial Refrigerator Manufacturers Association, the National Electrical Manufacturers Association, the National Refrigeration Supply Jobbers Association, the Refrigeration Equipment Manufacturers Association, and the new association of condensing unit manufacturers mentioned on page 1 of this issue. In addition, there are some lusty independents. Even worse, there are factions *within* some of these associations.

In the past these associations have shown little disposition to be friendly with the others. That's one reason why there are no *all-industry* statistics on commercial refrigeration. And without statistics, no group is going to get anywhere at Washington. Both OPM and OPACS are statistics-minded, and insist on seeing "the data" before entering upon any discussions.

Will the various associations and groups be big enough to forget their jealousies and competitive struggles in the face of this emergency? Will someone come forward with a broad plan of action which can be promoted by all factions?

Will refrigeration equipment receive the priority rating it deserves?

Every butcher, grocer, dairyman, and hospital chief who depends on refrigeration will await with keen interest what happens now. So will every man who sells or services refrigeration products. The future of an industry is at stake. So is the health of a nation.

'Business of 300 Jobbers In Jeopardy' ---H. W. Small

Thermal Co., Inc.
Wholesale Distributors
2448 University Ave.
St. Paul, Minn.

Editor:

Your recent article on the trend of national business is particularly worthy of the industry's attention in view of the accuracy of your earlier statements on the subject.

As a jobber of refrigeration supplies, I must be included among the nation's small businessmen. Your article is far from reassuring to me in my position but I feel that you have correctly felt the administration's pulse. When priorities are parceled out I do not believe our flow of material can continue at the present rate. This puts in serious jeopardy the group of small businessmen known as "Refrigeration Jobbers." There are approximately 300 firms who will find their livelihood, and that of their employes, seriously curtailed unless some immediate steps are taken to prevent it.

In these times of national stress, all elements of the commercial cooling industry should endeavor to preserve the gains recorded in the past five years. I believe there is room for both small and large business in this field. Each has helped the other and each will continue to help the other.

Some organizations are definitely "big business." The government has given them hundreds of millions of dollars and preference in the labor and material markets. Their war contracts will serve to carry them through this emergency at an increased production tempo. Their organizations will be expanded and preserved. At the same time they can operate their scores of branches and job refrigeration items in competition with the 300 small businesses already mentioned. Their unlimited capital and experience in contacting government officials is bound to further increase the competitive advantages they now enjoy.

These large organizations do not need that portion of their merchandising business which has to do with the sale of finned coils, expansion valves, tubing, fittings, and accessories which can be, and are, readily supplied by small organizations in competition with them.

To voluntarily retire from the sale of these items would help to maintain the status quo. It would per se remove such vexatious questions as the application of the Robinson-Patman Act to all parts manufacturers who are selling to these large organizations, jobbed items, at less than the prices quoted the 300 jobbers in competition to them.

The retirement would create a better spirit of cooperation between the large and small elements of the industry. It would help to make easier the establishment of franchised dealerships by the large firms. This is true because the local jobber would not fear the complete loss of a customer under the suggested conditions and would use his influence to encourage and make profitable such franchised outlets.

A great deal of the aggressive spread of the use of refrigeration products can be traced to the stimulus provided by the refrigeration jobber. The large organizations have been shown the value of the independent dealer and service man. They have recognized these factors after many years of refusing to do so.

The jobbers have sown and cultivated many ideas which are now fertile harvest fields for the large organizations. The total volume of business has increased for all factors. Why not recognize these factors and why should not the large organizations, of their own volition, make this gesture to small business, particularly in view of the fact that they are now being amply provided for by Defense contracts while small business is helping to provide the funds to make these contracts possible?

We will need all the help we can get from the industry and the government to keep our heads above water and preserve for the future both our business and the thousands of families dependent on it.

May your usual broadmindedness prevail upon you, Mr. Taubeneck, to publish this for all to read. It is the beginning, not the end, of one jobber's determination to fight for and to preserve those things which have provided livelihood for his, and his employes' families and partial or full support of the families of hundreds of friends and customers.

H. W. SMALL

Army Revises Plan For Refrigeration In Army Camps

(Concluded from Page 1, Column 5)

chests will be insulated. It is proposed that camp commanders will determine whether ice will be purchased from manufacturers in cracked form, cracked at a central dock before delivery, or delivered to mess halls in block form, to be cracked there.

When commercial ice is not available in sufficient quantities, or at a reasonable enough price to meet the needs of a large Army camp, it will be necessary to construct ice plants to meet those needs. Under the present plan, ice plants are to be constructed at the following stations: Fort Benning, Georgia; Camp Davis, North Carolina; Camp Forrest, Tennessee; Camp Polk, Louisiana; Camp Shelby, Mississippi; Fort Knox, Kentucky; Fort Leonard Wood, Missouri; and Fort Huachuca, Arizona.

Treasury Asks 10% Tax On Household Units

(Concluded from Page 1, Column 4)

raise $850,000,000 through these sharply increased taxes and thus avoid new imposts on gasoline, beer, tobacco, checks, candy, and soft drinks.

Indications are that if some of the Administration forces have their way, the household electric refrigeration industry may be taxed practically "out of existence." Such proposals have been heatedly debated by the committee, according to an article in a recent issue of "The Detroit Free Press" under the byline of Clifford A. Prevost, that newspaper's Washington correspondent.

Heavy taxation of the refrigeration industry, as well as of the radio and automobile businesses, is proposed with the aim of forcing curtailment of non-defense production which employs materials needed in the armament program, the article says. Mr. Prevost quotes Rep. Robert L. Doughton, North Carolina Democrat and chairman of the committee, as saying that the country can get along without electric refrigerators and that taxation might be the means of preventing the use of materials which are needed in the armament program.

Only Power Shortage Is In TVA Project

WASHINGTON, D. C.—Only power shortage in the U. S. is in the government's Tennessee Valley Authority project, while private companies have taken steps to meet new demands, the natural resources department of the Chamber of Commerce of the United States has reported.

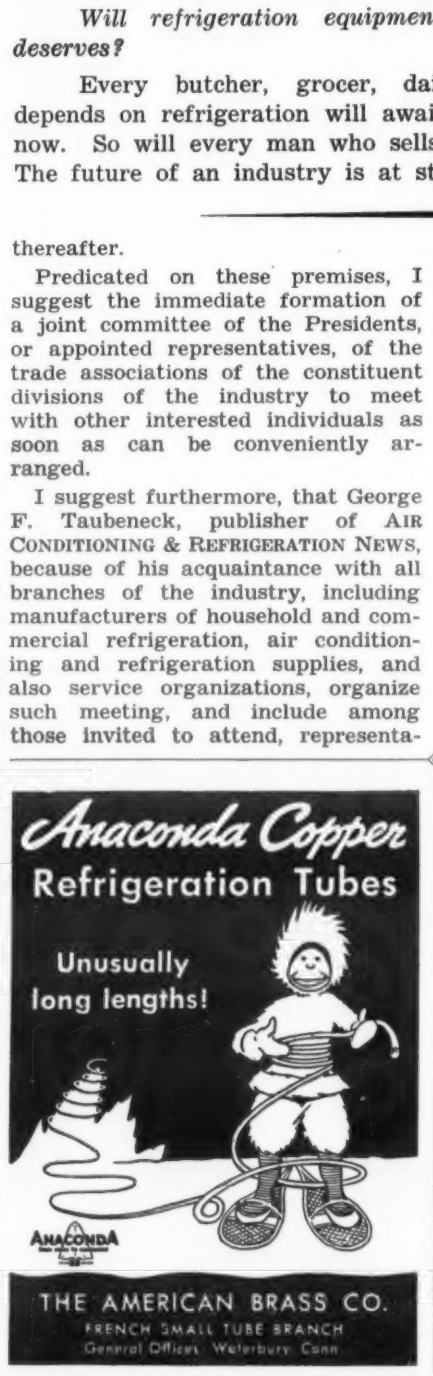
One critical power shortage for a defense industry—aluminum production—cannot be attributed to private companies, the report stated. Power to produce aluminum never has been a service of private utility companies, it was said. Until aluminum plants began to purchase power from TVA, their policy had been to generate their own.

Refrigerator Bids Sought For 5 Boston Projects

BOSTON—Bids for furnishing and installing electric and gas refrigerators and gas ranges for five U.S.H.A.-aided housing projects in Massachusetts will be received at the office of the Boston Housing Authority, 18 Oliver St., until 3 p.m. July 14, announces John A. Breen, chairman.

Contract documents, including specifications, may be obtained upon deposit of $25 with the authority, the amount to be refunded if the set is returned in good condition within 10 days after opening of bids.

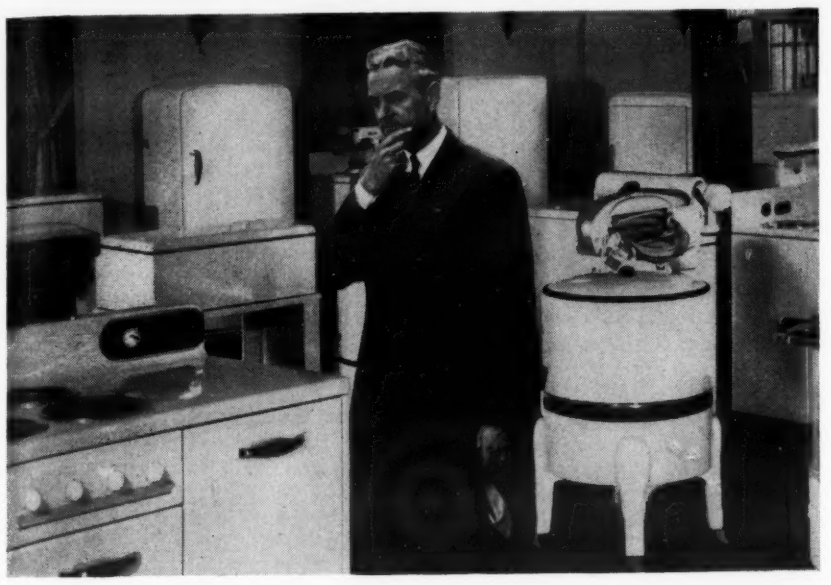
FIRST AGAIN
The New Bush Plasti-Cooler . . . first application of plastics to the low-side field.
BUSH MFG. CO.
HARTFORD, CONN.
610 N. OAKLEY BLVD.
CHICAGO
Bush Mfg. Co.
COMMERCIAL COOLING UNITS



SERVEL Supermetic
. . . THE LITTLE MACHINE WITH THE BIG FEATURES
Truly hermetic! Genuinely serviceable! PLUS a score of "super-features" that no other refrigerating machine in the industry can match. For all temperature ranges. 1/5, 1/4, 1/3, 1/2 HP. Write for details. Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana.

Scenes From New MKB Movie

(Above) When the housewife allows the salesman to demonstrate she's asking for proof, which a good demonstration will give—that's one of the many things the Modern Kitchen Bureau wants to teach salesmen through its new series of 10 sound-slide films. (Below) Scene from the film "How to Sell Electric Ranges."



* * *

MKB Prepares 10 Films On Sales Training

NEW YORK CITY—A series of 10 sound-slide sales training films, five devoted to basic selling fundamentals and five to specific procedures on the major lead-building units, have been prepared by Modern Kitchen Bureau for use by utilities and appliance merchandisers throughout the country.

Basic training films cover such fundamentals as "How to Build a Prospect List," "Getting the Right Start," "Demonstrating to Sell," "Answering Objections," and "How to Close." The other five films provide sales "know-how" on such appliances as refrigerators, ranges, water heaters, washers and ironers, and electric roasters.

Each film is accompanied by a manual, with suggestions as to using the films most effectively in training both utility and dealer salesmen. Questions and answers for quiz sessions that can be held with the showing of each film are included in the manual.

Prepared with an eye to actual sales-value, the films answer such everyday questions as how to use the user, how to meet the price objection, how to ask for the order, and more of similar nature. They are designed to provide flexible sales training material for dealer meetings, individual dealers and their salesmen, and for small groups of dealer salesmen where intensive sales training can be done. They also can be used with utility salesmen, as well as with regularly non-selling employes.

The bureau suggests that the films be shown at meetings of not more than 20 men, and combined with informal discussion periods.

Both new and old salesmen, the bureau believes, will find the films of value—the veterans for a review of methods many of them may tend to overlook or forget as time passes, and the beginners for a dramatic presentation of facts essential to an effective selling job.

Essential purpose of the films is to present and review facts perhaps already recognized by salesmen, but not used by all of them, nor to the correct degree by the others. Put together in an orderly pattern, these facts will give many salesmen a new start toward more sales, it is believed.

3,700 Units Is Goal Of Houston Drive

HOUSTON, Tex.—Sale of 3,700 refrigerators is the goal of the six-week campaign now being conducted by Houston Light & Power Co. for dealers in its territory.

Weekly prizes for both customers and salesmen, cash prizes for salesmen who lead at the close of the drive, and an electric refrigerator as the customers' grand prize are offered. Fifty-two prizes, ranging from $5 to $50, will be given to salesmen, including one $25 wearing apparel award.

To back up the campaign the utility will run some 800 inches of promotional newspaper advertising, in addition to sponsoring 12 radio spot announcements daily. Bill inserts are being mailed to 130,000 electric customers of the utility, while screen trailers are running in local theaters. Further utility assistance is provided by its current promotional sales calls in connection with the recent reduction in electric rates.

Dealers are grouped into several divisions on the basis of last year's refrigerator sales, so that salesmen will compete with only those in a similar volume producing group. Five dealer groups have been established for Houston, with seven others for the balance of the utility's territory.

New Hotpoint Dealers Named In Albany

ALBANY, N. Y.—New Hotpoint dealers in this area include J. C. Vosburgh & Son, Canajoharie; B. W. Bouck, Cobleskill; Metzger's Garage, Castleton; John Fitzpatrick, Coxsackie; Smith Harpp, Hadley; Bradley Electric Shop, Hoosick Falls; and Edward Scribner, Schoharie.

'Kitchen Party' Draws

LITTLE ROCK, Ark.—An "open house kitchen party" held two afternoons attracted scores of housewives to the Little Rock Refrigeration Co., Inc., 417 W. Capitol Ave., Frigidaire dealership. Miss Sue James, home service advisor for Arkansas Power & Light Co., supervised the demonstrations of electric cooking.

Home Laundry 'Pioneers' Honored By Bendix

SOUTH BEND, Ind.—The first 10 salesmen in the United States who sold 150 Bendix home laundries at retail since the inauguration of the Bendix Hi-Flyers Club in 1938 have been accorded special honors in the recently formed Strato-Flyer Ace division of the club as pioneers in the automatic home laundry industry.

The men are: Alfred B. Goodwin, Island Appliance Co., Hempstead, L. I.; Joseph T. Harding, Delaware City Appliance Co., Philadelphia; Paul R. Kelly, Paul R. Kelly Co., Cedar Rapids, Iowa; Harry S. Lacey, Maxwell Hardware Co., Oakland, Calif.; Thomas J. Manley, Delaware Power & Light Co., Wilmington, Del.; Roy J. Moothart, W. D. Ryan Home Appliance Co., Palo Alto, Calif.; A. W. Smith, Rhodes Bros., Tacoma, Wash.; Samuel Spitzberg, Barker Bros., Los Angeles; David E. Urner, David Urner Co., Bakersfield, Calif.; and N. S. Varin, N. S. Varin Co., Flushing, L. I.

Each of the pioneer salesmen was presented with a gold watch and a specially designed insignia, of which only 10 copies were made so that the distinction would be limited to these men.

Adds Warren Line

MEMPHIS, Tenn.—T. J. Hammond has purchased the Store Fixture Sales Co. at 410 S. Main St. here. Mr. Hammond has added Warren commercial refrigerators to the firm's lines.

Dealer Offers Customers Defense Bond Premiums

ST. PAUL—As an inducement to prospective customers to open accounts, St. Paul House Furnishing Co., local appliance dealer, is offering $1 in defense bond postal saving stamps with each first purchase of $14 or more.

Goodhousekeeping Appliance Set Up In Mobile

MOBILE, Ala.—Goodhousekeeping Appliance Co., Inc., has opened here under the management of Harold Jernigan, formerly of Montgomery. He will be assisted by Sid W. Rockwell. The company will handle Servel Electrolux (kerosene and butane) refrigerators, Thor washers and ironers, Gibson electric ranges, and a general line of elecrtical appliances.

Kelvinator To Wilson

OXFORD, S. C.—Wilson Tire Co., owned by Lonnie Wilson, has been appointed dealer here for the complete Kelvinator appliance line.

Community Opens Another

MILWAUKEE—Community Appliance Stores has opened another outlet at 2215 W. North Ave. The firm, headed by Charles Lubotsky, also operates a store at 1633 N. 12th St.

Retail League Points To New Home Market

BRIDGEPORT, Conn.—Big appliance market represented by the 500,000 new owner-built homes being constructed in United States this year keynotes the third in the current series of General Electric Retail Development League meetings now in progress.

Twelve troupes are conducting the meetings of 207 local chapters. Attendance of 10,000 dealers and salesmen is expected.

Selling plan outlined at these meetings is based on the low first cost and savings in operating a complete electric home as compared with a conventional type home. New G-E sales tool, "Your Home and Your Pocketbook," shows dealers and salesmen how to make greater unit sales in the new-home market.

Other highlights of the prgoram include the farm market for appliance sales, an open forum refrigerator discussion, and presentation of the new 1941 line of G-E portable radios.

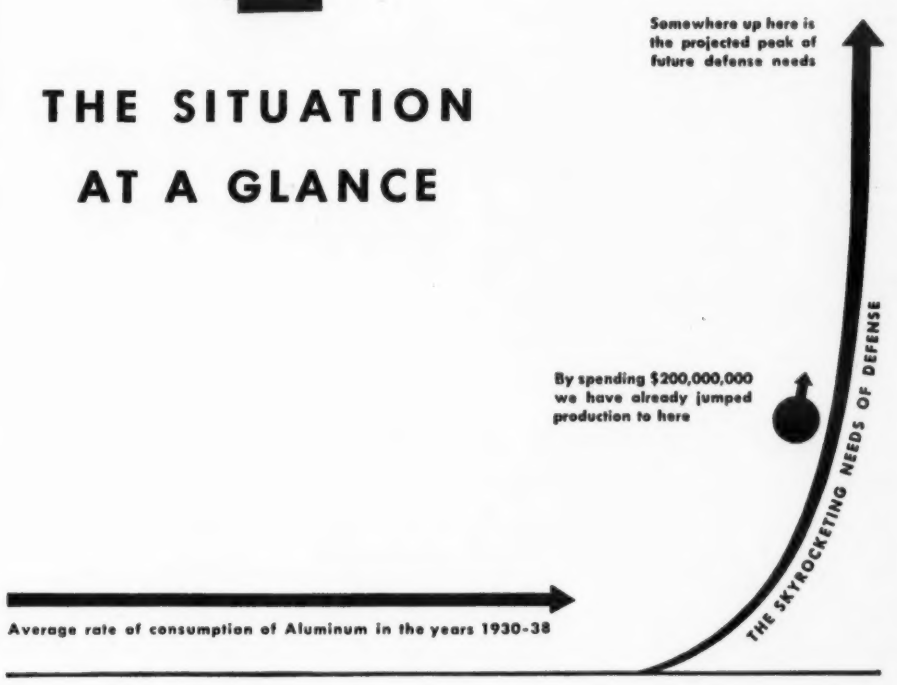
Frank Harris Joins Staff Of Columbia Wholesalers

WASHINGTON, D. C. — Frank Harris, veteran appliance retailer, has joined the sales staff of Columbia Wholesalers, Inc., Philco distributor here. Mr. Harris was formerly a salesman with Washington Refrigeration Co., distributor for Gibson and Farnsworth.

4

ALUMINUM, DEFENSE, AND YOU

THE SITUATION AT A GLANCE


Somewhere up here is the projected peak of future defense needs
By spending $200,000,000 we have already jumped production to here
THE SKYROCKETING NEEDS OF DEFENSE
Average rate of consumption of Aluminum in the years 1930-38

ONLY TWO OR THREE YEARS AGO, peace-time consumption was down around the level of that horizontal line.

NOTWITHSTANDING, even before the tragedy of Dunkerque started Americans thinking in terms of scores of thousands of planes, Alcoa went "all out" with a program which will mean the expenditure of nearly $200,000,000 of its own capital, so as to be ready for unprecedented demand.

THAT IS EXACTLY WHY defense is getting NOW every month, millions of pounds more aluminum than was officially anticipated would be necessary. We produced 50,000,000 pounds last month against an average of 14,000,000 during the peace-time years 1930-8.

ALTHOUGH WE ARE GOING AHEAD with further expansion because of an unforeseen need for aluminum, we are a bit proud that through our efforts to date, present defense needs are being met *in full.*

THE SECOND GUESS, like hindsight, is always more intelligent, even when its figures are almost astronomical.

BUT IT WAS THE COURAGE to spend our own money, before there was time for a second guess, that is delivering the aluminum for defense today.

ALUMINUM COMPANY OF AMERICA

Electric Refrigerator and Range Are Standard In 'Dream Kitchen' of American Housewives

Average Homemaker Wants a Large, U-Shaped Kitchen, Fully Equipped With Electrical Appliances, Including Dishwasher & Disposal Unit, 'McCall's' Survey Shows

NEW YORK CITY—Imagine a kitchen modern in design but colorful and gay in character, with the decorating plan keyed to the latest in modern appliances. Measuring at least 16 feet on its longest dimension, this kitchen has a U-shaped over-all arrangement of appliances. In addition to a full complement of major appliance units it also is equipped with an electric toaster, waffle iron, coffee maker, and clock. There are at least five convenience outlets and a central lighting fixture as well as special fixtures over the sink and preparation counter.

Does this sound like the kitchen you've always wanted to own? Well, there's a reason—for it's a composite picture of the "dream kitchen" of 4,157 people, including housewives, students, and professional designers, who submitted entries in the kitchen planning competition sponsored by "McCall's Magazine."

WHAT THEY WANT

Most of the women participating in the contest emphasized a desire for larger kitchens. As might be expected, over 50% of the submitted plans were for kitchens oblong in shape. The three grand prizes, however, were awarded to designers of L-shaped kitchens.

Practically all of the contestants provided for a handy and attractive place to eat in the kitchen. Nearly half of the plans incorporated a specially designed desk or similar center for the preparation of shopping lists and menu plans. Hobby centers, sewing centers, and laundry centers were included in many of the designs.

A majority of women wanted their dining and laundry centers included as an actual part of their kitchen, rather than being separated from the kitchen by either a counter-high, or a full partition.

Preference for the "U" type basic appliance arrangement was indicated by 52% of the women, 28.6% voting for a solid "U" arrangement and 23.4% for a broken or disjointed "U." The "L" type of arrangement was second in demand, with 22.3% indicating a desire for this type of appliance layout.

MAJORITY INEFFICIENT

In judging the contest, considerable importance was attached to the actual sequence of the individual major appliances. And right here—on one of the most important elements of kitchen planning—is where most of the entrants slipped badly. Only 47.1% of all contestants submitted kitchen designs calling for an efficient arrangement of appliances, while 52.9% of the entries showed inefficient arrangement.

Judging on this point was based on well established precepts. In general it has been agreed that in the ideal step-saving kitchen the refrigerator-preparation center and the range-serving center are separated by a double drain sink. To have a preparation counter by the refrigerator is believed to save more steps than any other combination of appliances.

Mechanical refrigerators scored a landslide victory in the tabulation of individual appliances desired, with a total of 98.8% of the women favoring this type of food preservation. Electric units accounted for 89.1% of this mechanical refrigeration vote, with gas tallying 8.4% and kerosene 1.3%. Several of the women who included an electric refrigerator in their plans specified space for frozen food storage.

Electricity also come out on top in the range balloting, with 67.5% of the women voting for this type of cooking medium. Gas ranges were second in popularity, piped and bottled gas units combined corraling 26.4% of the votes.

That women have finally caught up with the idea of the electric dishwasher and the waste disposal unit was indicated by the fact that more than half of them included a disposal unit and about a third of them included an electric dishwasher in their kitchen plans.

Porcelain enamel won out as the leading sink material by collaring almost three-quarters of all the votes. Monel metal, stainless steel, and vitreous china trailed in that order.

As for other appliances, the contest revealed that more than 85% of the entrants wanted an electric toaster, clock, food mixer, and waffle iron in their kitchen. More than 65% specified radio, electric coffee maker, and telephone. Some 31.4% wanted an electric roaster, and 16.4% an electric water heater.

One of the most remarkable revelations of the whole survey was produced by a check of the laundry centers which disclosed that 70.4% of the women wanted one of the relatively new automatic washers. Ironers, too, found an unexpected receptance with a 69% vote.

'SPOT' LIGHTING BEST

In regard to kitchen lighting, a great majority of the women indicated a desire for separate illumination over the sink and over the range, in addition to the kitchen's central fixture. Almost half of the women also wanted supplementary lighting over the work counter or preparation center. Some even specified separate lighting fixtures inside cabinets and over the planning desk. Several hundred votes were "written in" for fluorescent lighting.

Electric convenience outlets scored a slam-bang victory. Nearly six convenience outlets were specified in the average contest kitchen. Almost 21% of the entrants wanted four outlets, 17% wanted six, 14% wanted five, nearly 12% wanted three, and better than 10% wanted eight.

What American Women Want In the Kitchen

SIZE (LENGTH)	%
Under 11 feet	1.5
11 to 15 feet	50.9
16 feet and over	47.6

SHAPE	%
Oblong	53.8
Square	35.1
L shaped	7.3
Semi-circular	2.8
All others	11.1

CENTERS	%
Dining	94.4
Shopping and menu planning	45.3
Hobby	22.7
Sewing	16.4
Laundry	12.6
Miscellaneous	2.4

DINING CENTER LOCATION	%
Part of kitchen	63.7
Separated by counter-high partition	31.3
Separated by full partition	4.9

LAUNDRY CENTER LOCATION	%
Part of kitchen	61.9
Separated by full partition	20.0
Separated by counter-high partition	18.2

BASIC APPLIANCE ARRANGEMENT	%
U type	28.6
Broken U type	23.4
L type	15.1
Broken L type	7.2
Two-wall type	10.4
Individual center type	8.9
Straight wall type	2.2
All others	4.3

REFRIGERATOR	%
Electric	89.1
Gas	8.4
Kerosene	1.3
Ice	1.3
Ventilated pantry or cooler	3.0

RANGE	%
Electric	67.5
Piped gas	22.0
Bottled gas	4.4
Coal and wood	3.5
Kerosene	2.6
Fuel oil	0.3
Combination fuels	1.7

SINK AND ELECTRIC DISHWASHER	%
Single-well sink	59.4
Electric waste disposer	53.2
Double-well sink	38.3
Electric dishwasher	32.4
Sink with laundry tray	2.1
All others	0.1

SINK MATERIAL	%
Porcelain enamel	73.9
Monel metal	11.8
Stainless steel	10.8
Vitreous china	4.2

SMALLER APPLIANCES	%
Electric toaster	93.5
Electric clock	90.4
Electric food mixer	90.3
Electric waffle iron	88.2
Radio	75.3
Electric coffee maker	69.5
Telephone	66.5
Electric ventilator	46.5
Electric roaster	31.4
Electric water heater	16.4
Sewing machine	15.7

LIGHTING FIXTURE LOCATION	%
Central	86.7
Over the sink	77.0
Over the range	69.8
Work counter	44.4
Over dining unit	22.6
Inside cabinet	17.0
Over planning desk	10.1

ELECTRIC CONVENIENCE OUTLETS	%
One	0.3
Two	3.9
Three	11.8
Four	20.9
Five	14.3
Six	17.0
Seven	5.3
Eight	10.5
Nine	2.6
Ten	5.2
Over ten	6.7

INVITATION FOR BIDS

BOSTON HOUSING AUTHORITY

REFRIGERATORS AND RANGES, U.S.H.A.-AIDED HOUSING PROJECTS MASS. 2-1A, MASS. 2-5R, MASS. 2-6, MASS. 2-7 and MASS. 2-8R

The Boston Housing Authority will receive sealed bids for furnishing and installing (a) electric refrigerators, (b) gas refrigerators, (c) gas ranges for U.S.H.A.-Aided Housing Projects Mass. 2-1A (Charlestown), Mass. 2-5R (Orchard Park), Mass. 2-6 (South End), Mass. 2-7 (Heath Street) and Mass. 2-8R (East Boston) in Boston, Mass., until 3 P.M., Eastern Daylight Saving Time, Monday, July 14, 1941, at the office of the Boston Housing Authority, 18 Oliver Street, Boston, Mass., at which time and place all bids will be publicly opened and read aloud.

Bids shall be submitted in triplicate in sealed envelopes, endorsed with the name of the bidder and "Bid for furnishing and installing electric refrigerators, gas refrigerators, gas ranges for Projects Mass. 2-1A, Mass. 2-5R, Mass. 2-6, Mass. 2-7 and Mass. 2-8R.

Contract documents, including specifications, are on file at the office of the Boston Housing Authority, 18 Oliver Street, Boston, Mass., and may be obtained by depositing $25.00 in the form of a certified check payable to the Boston Housing Authority for each set of documents so obtained. The amount of the deposit will be refunded upon the return of each set in good condition within 10 days after the opening of bids.

Plans showing locations were equipment is to be installed are available for inspection at the office of the Authority. The successful bidder or bidders will be furnished with a copy of such plans.

Cash, certified check on, or certificate of deposit issued by, a responsible bank or trust company, payable to the Boston Housing Authority, or a satisfactory bid bond executed by the bidder and a surety company authorized to transact business in the Commonwealth of Massachusetts in the amount set forth in the contract documents, must be submitted with each bid.

The successful bidder will be required to furnish a satisfactory performance and payment bond, as set forth in the Specification.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the approval by the United States Housing Authority of the award of the contract by the Boston Housing Authority.

The Boston Housing Authority reserves the right to reject any or all bids and to waive any informalities either in the bidding or in the proposals, if it be in the public interest so to do.

Attention is called to the fact that not less than the minimum wage rates as set forth in the schedule contained in the Specification must be paid for work done on the project sites. Attention is also called to the provisions relating to Workmens Compensation and to conditions of employment applicable to work on or about the sites of the projects which are made a part of the Specification.

BOSTON HOUSING AUTHORITY

June 27, 1941

By: John A. Breen, Chairman

★ ★ ★ ★ ★ ★ ★ ★ ★

MILLS MIGHTY REFRIGERATION

Mills Condensing Units

By Mills Novelty Company

4100 Fullerton Ave., Chicago, Ill.

★ ★ ★ ★ ★ ★ ★ ★ ★

Best Water Heater Sales Jobs Win Awards From MKB For 3 Utility Officials

For the best performance on water heaters Modern Kitchen Bureau awarded prizes to utilities. Here are Harry E. Simpson, vice president of Florida Power & Light Co., Miami, winner of second prize; Jack Poteat, chairman of Nema's electric water heater section; Kinsey Robinson, president of Washington Water Power Co., Spokane, first prize winner; and F. A. Coffin, vice president of Wisconsin Electric Power Co., Milwaukee, third prize winner.

* * *

Winner Increased Heater Sales 33%

BUFFALO—Winners in the annual national water heater contest sponsored each year by Modern Kitchen Bureau were announced during the recent sessions of Edison Electric Institute's annual meeting here. They are: Washington Water Power Co., Spokane, first prize; Florida Power & Light Co., Miami, second prize; and Wisconsin Electric Power Co., Milwaukee, third prize.

Awards were made on the basis of the best all-around water heater performances during 1940.

Washington Water Power Co., winner of a silver trophy and $500 in cash, sold 46.2 water heaters per thousand residential customers, a total of 3,257 water heaters during the year, and increased its percentage of sales over 1939 by 32.9%.

Florida Power & Light Co., winner of $300, sold 28 water heaters per thousand customers, a total of 3,252 increasing sales 28.1%. Wisconsin Electric Power Co., winner of $200, increased sales volume by 27%.

Receiving honorable mention in the MKB water heater contest are Portland General Electric Co., Portland, Ore.; Idaho Power Co., Boise; and Knoxville Electric Power & Water Board, Knoxville, Tenn.

Raleigh Gets New Dealer

RALEIGH, N. C.—Carolina Appliance & Stoker Co. has entered the appliance business here and will handle the Norge line in its new building at 301 Glenwood Ave. Ralph Justice is manager.

Hotpoint Finishes Laboratories For Kitchen Classes

CHICAGO—Hotpoint's new kitchen laboratories are now completed and ready for use, and classes for home economists, consisting of eight five-day sessions, will begin July 7 and carry through Aug. 29, announces Miss Clara Jahn, director of the company's home economics department.

Completion of the new kitchen laboratories marks another milestone for Hotpoint, first company to include home economics work as an integral part of merchandising service, and a pioneer in the all-electric kitchen through establishment of the Hotpoint Kitchen Institute in 1932.

This year's kitchen classes will continue to emphasize "use values" of the appliances, Miss Jahn said, and each five-day course is designed to cover all phases of home economics participation in major appliance selling, demonstrations, and user-instruction. Actual practice with the equipment itself will be emphasized throughout the course.

Eligible for enrollment in the schools, for which a registration of $5 is being charged, are:

Home economists employed by utilities, and appliance distributors, dealers, and department stores; wives and women employes of Hotpoint dealers; REA home economists and home demonstration agents; college students and graduates (high school students are not eligible); home economics teachers in high schools and colleges; and foods and equipment editorial women of newspapers and magazines.

Classes also will be arranged for groups of retail appliance salesmen, Miss Jahn said.

Each practice unit in the new Hotpoint kitchen laboratories is equipped with an electric range, Electrasink (including dishwasher and kitchen waste exit), and a full complement of kitchen cabinets. Refrigerators are adjacent to the practice units. The laboratory is also equipped with complete Hotpoint home laundry appliances.

Classes will be conducted by experienced Hotpoint home economists from both field and headquarters staffs.

"YES SIR . . . IT'S A SUPERIOR ECONOMIZER"!

It will increase the overall capacity, and reduce the running time of your commercial job AS MUCH AS 20%.

ECONOMIZERS prevent sweating and frosting of suction lines—save compressor repairs caused by oil slugging—provide for active use of 100% of evaporator surface—and bring "on-the-line" jobs within the normal cycle range.

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Write for Catalog—it contains valuable information on Heat Exchangers.

Sold by leading jobbers everywhere

SUPERIOR VALVE & FITTINGS CO.

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The Service Man's Notebook

By Henry Kronke

Mr. Kronke, a service engineer in New York City, compiles useful, handy data for use in his work as he finds a repeated need for certain kinds of information. The editors suggest that service and installation engineer readers of the NEWS cut these tables out for their own notebooks.

FACTS ON BEER COOLING JOBS

DRAFT BEER CONTAINERS

Capacity Gallons	Weight Empty	Weight Full	Height Inches	Diameter Inches	B.t.u. To Cool 1° F.
4	18	49	15	13	38.7
8	36	98	17¼	16	77.4
16	66	190	23½	19¼	151.2
31	108	356	30¼	24	288.0

The beer storage room should be insulated with at least 3 inches of cork, the beer lines from the storage room to the bar cooler with 1½ inches of cork, and the bar cooler with at least 2 inches of cork.

Storage room should be maintained at 40-42° F.

The load on the storage room with 3-inch cork insulation is figured by the following formula:

External wall area in square feet × °F. temperature difference between inside and outside × 3.11 = B.t.u. per day.

To this must be added the cooling of the beer if it is not delivered at the storage temperature.

When constructing a bar cooler employing a water bath a beer coil should not contain more than 100 feet of block tin tube. If it is necessary to use more, the coil should be split up and run in parallel, with not more than 100 feet per section.

Special Exhaust Fan Equipment & Pneumatic Control System Used In Buffalo Hospital

BUFFALO — Four windowless operating rooms, equipped with complete control of temperature and humidity have been completed in Children's Hospital, Buffalo, N. Y. Because even air distribution was one of the basic requirements for conditioning the rooms, Anemostat ceiling type high velocity air diffusers were selected for the introduction of air.

As the rooms are dependent upon artificial lighting the sensible heat gain in each room was very high in proportion to the floor area involved. Recessed lighting in the ceiling amounted to 12 watts per square foot of floor space. Part of this heat load was reduced by exhausting air through the recessed lighting enclosures and thence to the outside.

Installation of heating and cooling equipment was relatively simple, as space was found immediately below the operating rooms for the location of these units.

The operating room system uses 100% fresh air, taken from the outside. This air first passes through a conventional dry filter, then through a non-freeze heating coil, and finally through a Westinghouse electrostatic precipitator.

The air is conditioned by a Carrier section, consisting of a six-row direct expansion coil and a recirculated water spray chamber equipped with eliminator plates and water pump. A centrifugal fan forces the air through individual ducts to each operating room where the air is discharged through ceiling diffusers. Reheating coils are mounted in each of these ducts for secondary control of air temperature and humidity.

Control of the system is pneumatic. A dewpoint controller operates a steam valve on a recirculating water heater and a steam valve on the pre-heat (fresh air) coil on a falling dewpoint, and operates a 15-ton Carrier condensing unit on a rising dewpoint. The condensing unit is equipped with an automatic capacity reducer and a back pressure valve in the suction line.

A room thermostat in each operating room operates a steam valve on its respective reheat coil to maintain a constant room dry-bulb temperature.

An exhaust fan on the roof of the building draws air from each operating room at the floor line, and from the ceiling of the adjoining sterilizer rooms. This fan exhausts slightly less than the supply air to the operating rooms in order to maintain a slight positive pressure.

The air conditioning system in the Children's Hospital operating rooms is used only when the rooms are in use, thus effecting certain operating economies. For this reason a steam convector was installed in the room, under the control of the room thermostat. When the conditioning system is turned off the dry-bulb temperature is maintained by the convectors.

The installation was made by the Cooney Refrigeration Co., of Buffalo, N. Y. under the personal supervision of Leonard N. Reed, engineer for the company.

Factors In the Selection of Small Electric Motors

The proper selection of ⅛ to ¾-hp. motors for light industrial and household use is quickly made from a table compiled by the Westinghouse Electric & Mfg. Co. The information is listed in the thumbnail sketch below.

Type and Sizes	Where to Use	Features and Characteristics	Power Supply	Speeds
Split Phase High Torque ⅛, ¼, and ½ hp. high starting torque.	Woodworking tools, sump pumps, tool grinders, home workshops, and similar equipment not starting under heavy load.	Sleeve bearings. Indestructible rotor. Rigid or resilient mountings.	Single phase 60, 50, or 25 cycles. 110 or 220 volts.	1,725 r.p.m. on 60 cycles; 1,425 r.p.m. on 50 or 25 cycles.
Split Phase Gen. Purpose 1/20 to ⅓ hp. medium starting torque.	Fans, blowers, oil burners, centrifugal pumps, unit heaters, and other easily started machines. Use where frequent starting is required and normal starting and running torques are sufficient.	Low starting current prevents light flicker. Sleeve bearings. Ball bearings, Thermoguard optional. Quiet running. Reversible. Rigid or resilient mounting.	Single phase 60, 50, or 25 cycles a-c. 110 or 200 volts.	3,450, 1,725, or 1,140 r.p.m. on 60 cycles; 1,425 r.p.m. on 25 cycles.
Capacitor Start, Gen. Purpose ⅛, ¼, ⅓, ½, and ¾ hp. extra high starting torque.	Pumps, machine tools, refrigerators, compressors, air conditioners, water coolers, and similar equipment needing heavy starting power.	Capacitor gives low starting current . . . prevents light flicker. Few wearing parts. Quiet. Thermoguard optional. Rigid or resilient mounting.	Single phase 50 or 60 cycles c-c; 110 or 220 volts for ¼ hp. and smaller. Larger sizes, 110-220 volts.	3,450, 1,725, and 1,140 r.p.m. on 60 cycles; 1,425 r.p.m. on 50 cycles.
Polyphase ⅛, ¼, ⅓, ½, and ¾ hp. high starting torque.	Companion to single phase motors. Special designs furnished for hoists, etc., that require extra high starting torque.	All ratings permit starting across line. Rigid mounting standard. Ball bearings optional equipment. Sleeve bearings standard. Protection usually provided in control.	2 or 3 phase; dual frequency 60, 50 cycles. 110, 220, 440, 550 volts.	3,450, 1,725, and 1,140 r.p.m. on 60 cycles; 1,425 or 960 on 50 cycles.
Direct Current 32, 115, and 230 volts.	Suitable for all direct current applications.	Ratings below ½ hp. may be started across line. For ratings ½ hp. and above, starting rheostats are advised.	Direct current 32, 115 and 230 volts.	1,725 and 1,140 r.p.m.

Just Carry a Roll of Baling Wire For Emergency Calls

BRADENTON, Fla.—"Baling wire" has become a standard part of the service kit used by A. R. Pool, refrigeration service engineer here. In a letter to AIR CONDITIONING & REFRIGERATION NEWS he tells how he happened to add this rather strange material to his kit:

"Editor:

"Two weeks ago the A. & P. manager rushed into our place and informed us his butcher had tapped the expansion valve with a cleaver. The valve was on a single-duty display case. It was a Frigidaire TEV-10 valve. I went over and looked at the valve. The complete bakelite top had been completely knocked off.

"The A. & P. man explained that he had no authority to permit repairs, let alone replacements. But he had a case full of meat, and letters take time. Wasn't there anything I could do?

"Well, I said, I might be able to wire the top back on so the valve would work for a day or two. So I got some 'baling' wire and wired the valve top back approximately in place. Today the job is still working, the case has a better temperature than it had before.

"I expect 999 service men out of each 1,000 would say it can't be done. But from now on I am always carrying a roll of 'baling' wire.

A. R. POOL"

Southern Transfers Jones

WASHINGTON, D. C. — "Joe" Jones has been transferred from the radio division of Southern Wholesalers, Inc. to the firm's Norge sales department.

Service Bar Cools Draft And Bottled Beer

ATLANTA — New "Service Bar" providing cooling for both bottled beverages and draft beer, with water cooling available at extra cost, has been introduced by the Warren Co., Inc.

Four models are included in the line, ranging in length from 7½ feet to 16 feet. Smallest model has space for one keg, while the others handle two kegs.

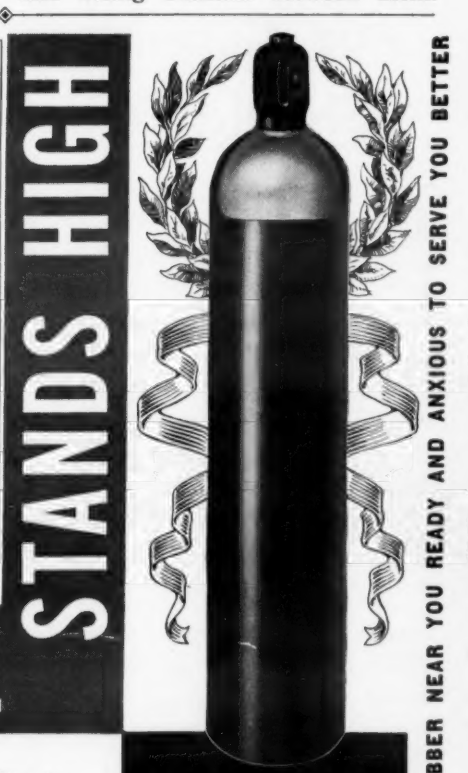
The service bars are designed for remote installation of compressors, but units can be installed in all models if desired. Factory-equipped models include a simplified defrosting system.

Water cooling system available is claimed to cool 5 gallons an hour from 90° to 40° F. An automatic glass filler is fitted into the stainless steel rinsing tank above the keg compartment.

The bar is fitted with a Formica top. Front, back, and each end are finished in porcelain. Hard rubber doors slide in hard rubber tracks. Insulation is provided by 3 inches of cork.

Harvill & Byrd Open New Hotpoint Dealership

LITTLE ROCK, Ark.—Lee Harvill and Billy Byrd have opened the Harvill-Byrd Electrical Co. at 721 Main St. as a Hotpoint dealership. The owners have a total of 40 years' experience in the appliance, fixture, and wiring business between them.



ANSUL

. . . REFRIGERANTS STAND HIGH in quality, in machine performance, and in the regard of Ansul's friends and customers throughout America. For 25 years Ansul men have worked with conscience, conviction, and with pride to make this so. The wide acceptance and use of Ansul products, the steady increase of this acceptance, and good words of our many friendly customers give us assurance that it is so.

Agents for Kinetic's "Freon-12"

● ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN

● THERE IS AN ANSUL JOBBER NEAR YOU READY AND ANXIOUS TO SERVE YOU BETTER

Locker Plant Problems Discussed In Bulletin

LANCASTER, Pa.—An eight-page illustrated bulletin entitled "Frozen Food Locker Plants—A Business Opportunity" has been published by the building materials division of Armstrong Cork Co. to promote its insulation material and the two patented locker plant systems—"Polar Chest" and "Polar Wheel"—for which it is licensee.

First three pages are devoted to an elaborate answer to the question of "What is a frozen food locker plant?"

The purpose of the locker plant is outlined, operating methods are described, design and construction problems are discussed, and profit possibilities are listed.

This section is illustrated with photographs of the chill room, processing room, locker room, quick freeze room, and exterior of various plants.

A chart is used to show the relationship between plant cost, expense, and profit.

A page each is devoted to the construction and operation of the orthodox walk-in type of plant, the Polar Chest system, and the Polar Wheel system, both photographs and diagrams being used to supplement this material.

New Structure Cuts Conditioner Costs

MARION, Ind.—Production costs of 13 different standard air conditioners made by Peerless of America, Inc. have been reduced by using Prefabricated Lindsay Structure, it is said.

The irregular space requirements to be met, the changing location of ducts, as well as the large variety of capacities of these air conditioners require virtual individual housings. Because Lindsay Structure is available in many sizes, cabinets for conditioners can be assembled to meet varying individual needs without the high cost of "custom" building.

Redwood Lockers Feature New Plant In 'Defense Area'

PLATTSMOUTH, Neb. — Lockers finished in redwood and streamlined doors mark the new 500-locker storage plant built here by A. B. Rogers. A York 7½-hp. compressor supplies refrigeration.

Mr. Rogers is counting on the $10,000,000 army plant under construction near here to boost the population and thus bring new business to his plant. He operates two other smaller locker plants.

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Air Conditioning Should Benefit

INSTALLATIONS of air conditioning equipment in aircraft factories now a-building are so enormous they almost defy the imagination. Less than a year ago a 100-ton air conditioning installation was a whopper. Today a 100-ton *error* in an original installation is laughed off.

In some of these new aircraft plants—particularly in Dayton and Cincinnati—the installations are figured in terms of *thousands* of tons.

Experimental "blackout" (windowless) plants must incorporate air conditioning. Thus industries which never before had considered air conditioning essential are today getting first-hand experience with the advantages of working under its beneficient conditions.

ENGLAND BLACKS OUT & AIR CONDITIONS BLAST FURNACES

Of all "blackout" plant installations the most staggering to the imagination are those in England in which the blast furnaces have been blacked out! Blast furnaces, naturally, were a great target for the bombers; but at frightful cost they have been covered and *air conditioned.* (If they weren't air conditioned, the workers inside would suffocate.) No details on these installations have seeped out of England yet, although their existence has been vouched for to the editor by Prof. John Maynard Keynes, Churchill's private economist (who has been lent to Roosevelt).

Air conditioning installations in airplane motor plants, and in other defense industries, are made necessary because of the extremely close tolerances called for in the manufacturing processes. Without air conditioning, expansion and contraction of the metals during varying changes in temperature and humidity would throw these microscopic measurements out of line.

From all this there is no doubt that two things will happen to further the cause of air conditioning:

(1) Many industries, and many individuals, will become sold on air conditioning. Laborers who work in an air conditioned plant are going to want it at home. Installations in "blackout" plants will have results on workmanship and employe health and morale that will interest plant operators. Further expansion, blackout or no blackout, will probably entail air conditioning.

(2) The science of air conditioning, its engineering progress, will be impelled forward at a greatly accelerated rate.

As to this latter happenstance, one reason why air conditioning engineering seems to have lagged behind public expectance is that the market has always been so small. Everybody—from manufacturers to dealers—has been losing shirts in air conditioning. There hasn't been enough margin to support adequate research.

Now, suddenly, there is a tremendous market. The purchaser (Uncle Sam) has an enormous sock into which he can reach for funds. Pioneers in air conditioning research may soon see their dreams come true—their dreams of adequate funds and adequate staffs.

Air conditioning may get an impetus from our current defense program almost as great as that given industrial electric motors in our last war.

'. . . And In Reply Would State . . .'

THE wasted word tonnage in business correspondence is proverbial. Writers innumerable have offered pointers on how to reduce the redundancy. But Charles B. Driscoll, former editor of a newspaper syndicate, goes right to the root of the matter in an article in Nation's Business.

The trouble, he thinks, is that the dictation of letters has become a sort of ritual in business offices. Besides being too wordy, far too many letters are written.

Mr. Driscoll reduced a total of 10,000 letters a year in his business to 1,000 dictated and transcribed. A large part of his correspondence he answered by the simple expedient of short, longhand messages on postcards.

He wrote and signed these himself, in a fraction of the time formerly taken to dictate replies, as well as saving his secretary's time for more important work. All she had to do with the postcards was to address them.

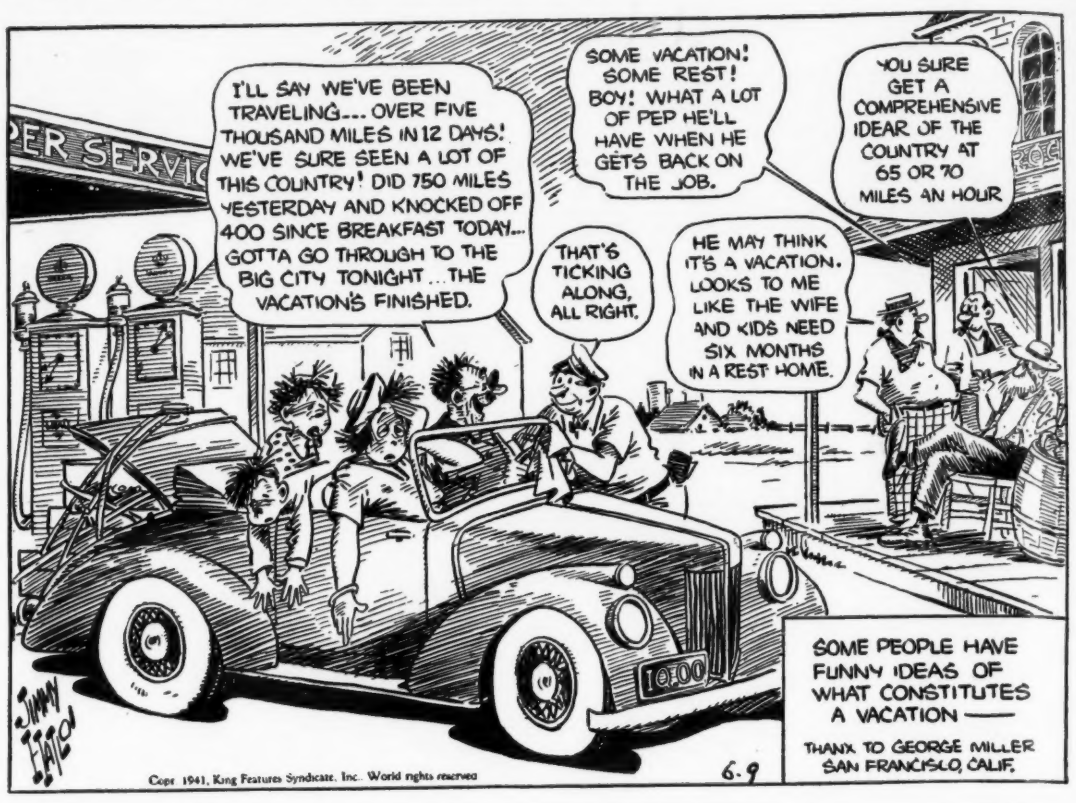
To a customer (a personal friend) who had kicked about the charge for the syndicate's service, Driscoll penned a note like this:

> Dear Jack: You're nuts. It's worth twice the money. Keep still, please, or the Boss will raise your rate.

This is an idea not only for economy of time but for making the business more human. It is a way around the formal reply in which the executive's name is signed by a secretary and then initialed by herself. And it would eliminate forever that epistolary monstrosity, "Dictated but not read."

But, the reader may object, that way there's no copy kept. So what! If Driscoll's experience is representative, six out of ten business letters require no carbons. They merely serve to clutter up offices with filing cabinets.

They'll Do It Every Time . . . . . By Jimmie Hatlo


I'LL SAY WE'VE BEEN TRAVELING... OVER FIVE THOUSAND MILES IN 12 DAYS! WE'VE SURE SEEN A LOT OF THIS COUNTRY! DID 750 MILES YESTERDAY AND KNOCKED OFF 400 SINCE BREAKFAST TODAY... GOTTA GO THROUGH TO THE BIG CITY TONIGHT.. THE VACATION'S FINISHED.
SOME VACATION! SOME REST! BOY! WHAT A LOT OF PEP HE'LL HAVE WHEN HE GETS BACK ON THE JOB.
YOU SURE GET A COMPREHENSIVE IDEAR OF THE COUNTRY AT 65 OR 70 MILES AN HOUR
THAT'S TICKING ALONG, ALL RIGHT.
HE MAY THINK IT'S A VACATION. LOOKS TO ME LIKE THE WIFE AND KIDS NEED SIX MONTHS IN A REST HOME.
SOME PEOPLE HAVE FUNNY IDEAS OF WHAT CONSTITUTES A VACATION —
THANX TO GEORGE MILLER SAN FRANCISCO, CALIF.
Jimmy Hatlo
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BOOK REVIEWS

Secrets of Closing Sales, by Charles B. Roth, published by Prentice-Hall, Inc., New York. 194 pages, including index. Price $2.50. Review by J. S. Wilford.

A BOOK came to our desk recently with a new and refreshing point of view on selling and getting orders. Charles B. Roth, president of Charles Roth & Associates, Sales Counselors, abandons mumbo-jumbo to the "sales psychologists" and uses such earthy and selling terms as "Brass Tacks Essentials of Closing Sales." In "Secrets of Closing Sales," he analyzes selling from the time the salesman meets the prospect—even before—to getting the order.

That's where the new point of view comes. Mr. Roth believes that successful selling moves steadily, and persistently toward only one subject, closing the sale. All else is conversation.

He discusses the ground work to getting the order, explains the Professional Attitude, which makes a salesman a force in developing customers from prospects, and then he swings through seven chapters, each of which discusses a separate closing technique. Other chapters bring up some new selling ideas, and sharpen and polish some old and tested selling tools.

From our experience, and the stories we have heard in the hotel lobby and the purchasing lobby, one of the most discouraging failures in selling can be that in which the prospect is "sold" but cannot be moved to buy. This and more difficult situations are handled by Mr. Roth in a practical, usable fashion.

He shows how different techniques move different prospects to sign the order, even though the situations may be broadly alike, or the techniques in some cases differ only in the emphasis upon a point or two.

The seven techniques are identified by quite self-explanatory titles: Assumptive, an attitude assuming that the prospect will buy; Subordinate Question, assumes the prospect will buy, and gains his O.K. by his affirmative answer to important questions; Physical Action, brings the prospect into a buying mood by action which impels agreement; Impending Event, stimulates buying by threat or fear of what will happen if he doesn't buy now; Narrative, tells a story that puts the prospect in a buyer's shoes; Inducement, offers something other than the product for sale as a stimulant; and Ask-Them-To-Buy is simple and often effective technique if used tactfully but forcefully.

Two excellent chapters discuss common problems, and offer help for any salesman. One is on the power of words in closing sales, and it points to words which have power. Another concerns buyer complexes, and it considers the emotional or mass instinct factor, which a single buyer will almost invariably heed or allow to move him.

The reader feels an urge to go right out and begin using the methods which the book describes. And that's alright. The ideal testing ground is in the presence of a prospect. But you can make the tests more effective by some homework. Use a mirror to improve your smile. Of course, that's old stuff. Somewhere in the book, the author admits as much for many of the ideas he puts forth, but that's part of the secret—to use tried and proven ideas.

There are faults in the book. Mr. Roth, like many successful salesmen, has seen and talked with a lot of people, and learned a lot from them. However, he has gained from that a flair for broad generalities which do not always lend credence to the point they illustrate. Such is the case when he states, "An actor can portray any character he is called upon to portray, and can register any emotion. . . . If he cannot he is not an actor."

Mr. Roth also demands as a prerequisite to successful selling that a salesman know as much about a prospect as the prospect knows about himself, or he should not begin on the sale. This would be a difficult task for most household refrigerator dealers, who must feel their way as they go along, because they have never laid eyes on many prospects until the minute they walked into the store.

All in all, Mr. Roth does a good job of selling his ideas. Also, his clear, simple style is effective in demonstrating a point, that you'll make more sales if you are sure your prospect understands what you are telling him.

LETTERS

CORRECTION: IT SHOULD READ 'KELVINATOR'

Home Service & Supply
Stamps, Ark.

Editor:

We take this opportunity for thanking you for your news item in the last issue of AIR CONDITIONING & REFRIGERATION NEWS. Since your informant seems to be under the impression that we were handling Hotpoint, we also wish at this time to make a correction.

Truth of the matter is that we are now dealers for Kelvinator and would appreciate it if you would make a correction in your valuable paper at an early date.

Home Service & Supply is presided over by the writer and Mr. E. A. Barney. Mr. Barney, of course, will be the electrician of the firm, and the writer, refrigeration engineer.

We would greatly appreciate your entering us for a year's subscription to AIR CONDITIONING & REFRIGERATION NEWS.

F. W. BARNES

'MANUALS THE CLEAREST OF ANY TEXTS'

P. O. Box 455
Kankakee, Ill.
June 16, 1941

Sirs:

I have just finished the spring term of the free refrigeration class and will start the summer term July 14.

Some of the boys here are ordering No. 2 Manual for the next term.

I think there were about 18 of No. 1 Household ordered and you will probably have orders for about eight this time for the same bunch for No. 2 Manual. I try to keep a couple of months ahead so would appreciate a copy of No. 1 Commercial Manual so as to lay out the autumn work.

You will also receive orders for the new summer class for the No. 1 Household Manual.

I consider your manuals the clearest of any texts that are available for any school which teaches students the necessary steps in refrigeration service.

E. C. HARRIS, Instructor

N.R.S.J.A. Discloses Progress on Surveys And Advertising Plan

(Concluded from Page 1)

second survey was decided upon.

Another project aimed at assisting members in conducting their businesses more profitably is that of preparing a monthly report based on the increase or decrease in volume of sales sent in by each member.

"It has long been felt," Mr. Hovey said, "that if the individual member of the N.R.S.J.A. had a true picture of where his firm stood in the upward or downward trend in business in the refrigeration supply jobbing field, it would enable him to better conduct his business."

Decision to sponsor an advertising campaign through the medium of trade publications was also approved by the association's board. Purpose of the campaign is to "convince the manufacturers and service men that the N.R.S.J.A. jobber is an integral part of the economical and efficient distribution of refrigeration repair parts from the manufacturer to the service man and then to the ultimate user."

Appointment of Howard H. Hubbell, Brass & Copper Sales Co. of St. Louis, as chairman of the association's nominating committee is announced by President C. E. Borden. Other members of the committee include R. M. Graves, Bowen Refrigeration Supplies, Atlanta; H. Whiting Holt, William Orr Co., Pittsburgh; and O. A. Forslund, Forslund Pump & Machinery Co., Kansas City, Mo.

Since there will be four vacancies for directorship in the association this year, the committee will determine what areas are most entitled to representation on the board of directors and what men shall represent these areas.

'Nice Catchin'

There are 187 speckled trout on the board which is being held by H. M. Milne, head of Modern Household Appliances, Ltd., Westmount, Quebec, Canada, distributor for air conditioning and refrigeration equipment and supplies. But the picture above doesn't show them all—there were 208 in the catch made by Mr. Milne and his companions at his camp back of Buckingham in the Province of Quebec. Mr. Milne hints he might reveal the exact spot to some of his industry friends.

Necessary To Ration Metal Products, Finds Cincinnati Jobber

CINCINNATI — "We could do three times as much business as we are doing this year if we did not have to ration brass, copper, and other metals to customers," asserts F. Schewene, of the refrigeration supply department of Williams & Co., metal jobbers here.

Mr. Schewene reports that in the face of a strong demand for tubing, fittings, and other copper and brass parts, the company has found it necessary to scale down customers' orders to the available supply.

"What we have attempted to do to date," Mr. Schewene said, "is to distribute the available supply of these materials among our customers' orders, and back order the rest."

Brunner Offers Dealers New Window Sign

UTICA, N. Y.—Printed in gold, orange, and black, a new identification sign is being made available by Brunner Mfg. Co. to its refrigeration and air conditioning dealers. Top of the sign is company's trademark; the lower half reads, "Refrigeration and Air Conditioning."

Dealers may obtain the sign from local Brunner representatives, who will mount the sign on door or window.

R. W. Cook Joins Army As 2nd Lieutenant

ST. LOUIS—R. W. "Bob" Cook, formerly St. Louis representative for Ranco, Inc., and Superior Valve & Fittings Co., and inventor of the Cook Calculator, is now a second lieutenant in the Office of the Quartermaster General, U. S. Army, Washington, D. C.

Mrs. Cook and R. W. Cook II are with Mrs. Cook's relatives in Dayton, Ohio.

Howard Jones of Ranco's sales department is taking over Mr. Cook's territory for the refrigeration controls firm.

Goodrich Names DeLong Head Of Mechanical Sales

AKRON, Ohio—Clyde DeLong has been named operating manager of the mechanical sales division of The B. F. Goodrich Co. to succeed F. A. Lang, who has been transferred to the managership of heel and sole sales.

Bellows Applications Discussed By Fulton

KNOXVILLE, Tenn.—The Fulton Sylphon Co. has recently issued a 28-page catalog on seamless metal bellows and bellows assemblies, indicating fundamental applications of the bellows and describing both roll-formed and hydraulically formed bellows in single and multi-ply types.

It discusses bellows metals, the action of bellows under load, their endurance qualities, their life expectancy, etc., describes various bellows types, and gives characteristics of brass, phosphor bronze, Everdur, Monel, and steel bellows.

New Protective Apron For Workers Introduced

SOUTHBRIDGE, Mass.—An apron designed to protect the worker and his clothing against contact with injurious industrial compounds and liquids has been introduced by American Optical Co. here.

Called the "AO Protectocote," the new apron is said to be non-inflammable and resistant to oils, tar, greases, acids, chemicals, paints, cutting fluids, solvents, gasoline, caustics, alkalis, and other substances. It is made in two styles and 11 sizes.

TO SIMPLIFY OPERATION AND INCREASE EFFICIENCY!

2 New PRECISION-BUILT FRIGIDAIRE CONTROLS

...For Walk-In Coolers and Display Cases

The Frigidaire Summer-Winter Cold Control is easily operated by the store owner or manager. It is adaptable to installations having gravity or forced air evaporators. A two-way control of fixture conditions is provided:

FIRST: The temperature may be regulated exactly as desired to meet load conditions.

SECOND: The switch-over from summer to winter or winter to summer operation is made without a service call! Unit automatically defrosted in summer. Irregularity in operation of condensing unit is corrected in winter. Greatly reduces sliming of meats! Temperature accurately maintained within small range at all times.

SUMMER-WINTER COLD CONTROL
Temperature Range 34° to 42° F.

SIMPLE TO OPERATE! *Complete instructions for operation appear on the nameplate.*

UNIVERSAL ICE CREAM SWITCH

Normal Range: . . *Off,* + 4°; *On,* +18° F.
Coldest Obtainable: . *Off,* −14°; *On,* + 2° F.
Warmest Obtainable: Off, +20°; *On,* +32° F.
Minimum Differential Obtainable: . . . . . 8½° *to* 8¾° F.

...For Ice Cream Cabinets

The Frigidaire Universal Ice Cream Switch is called "Universal" because it may be adapted to the great majority of ice cream cabinets *of all makes* now in use. This means you can reduce your inventory of ice cream cabinet switches to *one style and make* for all practical purposes! Delivered to you ready for installation—complete with all necessary mounting parts and full instructions for installation and operation.

Write or phone your Frigidaire Distributor for Complete Information

GENUINE FRIGIDAIRE PRECISION-BUILT PARTS

TO SATISFY YOUR EVERY REFRIGERATION SERVICE NEED

Supplies Jobber Discusses Metals Matter Frankly In Letter To His Customers

SYRACUSE, N. Y. — How one refrigeration parts and supplies jobber is informing his customers of necessary changes in some sales and company policies under the present defense emergency is illustrated in a recent letter sent out by Ted Glou of Central Service Supply Co.

Says Mr. Glou's letter:

Central Service Supply Co.
Wholesale Distributors
Refrigeration Supplies,
Heating Controls, Specialties
409 E. Jefferson St., Syracuse, N. Y.

AN OPEN LETTER TO OUR CUSTOMERS

We know you are quite familiar with a recent General Metal's Order No. 1 and other proclamations by the OPM under recent dates; and some of you may be wondering what this means and how it will affect your particular business.

The greatest effect will be to slow up deliveries and in some cases price increases will be general.

It will be the policy of our company, as far as we can manage, to sell all merchandise at the lowest prices, and increases will go into effect only when our stocks have been depleted and new merchandise is invoiced to us at higher prices. General Metal's Order No. 1 prohibits stock purchasing and with slowness of deliveries, we cannot attempt to guarantee prices.

Certain companies have already announced increases effective at the early dates and will take care of orders up to the capacity of materials they have on hand and in such cases we will try to notify our customers in advance. Among these latter are heating control instruments and in view of the fact that the heating control manufacturers are the leaders in the field it is almost sure to follow that refrigeration controls will be advanced.

The advance on heating controls has been announced for June 15 and your orders for same should reach us no latter than June 12 to give us an opportunity to get any orders we might have in our files into the factories.

We will try to maintain our service and send you our News bulletins during the emergency but we are so darn busy trying to keep up with prices, trying to secure merchandise, and getting at least one fishing trip in this summer that in all probability there will be very few of our Central Service News going out this summer.

TED GLOU

Prizes Offered For Home Lighting Sales

NEW YORK CITY—Best report on home lighting activities during the first six months of 1941 will win $500 for the utility submitting it to the home lighting equipment sales committee of Edison Electric Institute. The contest closes Aug. 1.

Second award is $200, third $100. Four awards of $50 each complete the prize fund.

The activities may be conducted by the utility only, or jointly by the utility and dealers, or for dealers only. However, the rules specify that the leadership, planning, and follow-through must be the responsibility of the utility either directly or through an electric league.

Westinghouse Gives Figures on Wages

EAST PITTSBURGH, Pa. — Employes of Westinghouse Electric & Mfg. Co. received an average weekly wage of $42 in 1940, the highest ever paid by the company. The company last year experienced the greatest expansion in business in its 55-year history, and 1941 business is far ahead of 1940, employes were told in a recent report.

The average annual wage was $2,156, representing $1,947 in base wage or salary and $209 in adjusted compensation under the company's five-year-old wage and salary plan.

More than 10,000 employes were added last year, increasing the total from 48,487 at the end of 1939 to 58,503 at the close of 1940. Since the first of this year the payroll has jumped to more than 65,000. National defense orders are chiefly responsible for these large increases, the report says.

Orders received in 1940 amounted to $400,477,724, some 40% in connection with national defense. Net sales billed were $239,431,447, including $21,000,000 in defense equipment. Unfilled orders on Dec. 31, 1940 totaled $223,685,737, of which $156,000,000 was for defense needs.

The company paid $22,533,313 in taxes in 1940, more than double the 1939 figure of $10,390,874. Taxes last year equalled $8.43 a share, nearly twice the amount of dividends paid. These taxes were equivalent to $427 for each employe, as compared to $136 in 1935.

In 1940 the average number of employes was 52,723, their average age 34.98 years, and average length of service with the company nine years. Of each 100 employes 79 were men and 21 women. Some 18,000 male employes were registered under the Selective Service Act.

DU PONT REG. U.S. PAT. OFF. Artic REG. U.S. PAT. OFF.

The Preferred METHYL CHLORIDE for Service Work.. Backed by Du Pont Technical Assistance

PROMPT DELIVERY COAST-TO-COAST

DU PONT REG. U.S. PAT. OFF.

For information about nearest source of supply, write to
THE R. & H. CHEMICALS DEPARTMENT
E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington, Delaware
or National Ammonia Division
Frankford P. O. Philadelphia, Pa.

Fight For Life

Radio Industry Struggles For Existence In Face of Metal Supply Curtailment

NEW YORK CITY — Despite a violent outcry from the industry at its classification as a luxury and therefore "non-essential," drastic curtailment and possibly virtual discontinuance of peace-time manufacture of radio sets is anticipated in trade circles here. Radio manufacturers have an aluminum inventory of only about three or four months' duration at the present time, it is said.

Informed observers expect the acute shortage developing in aluminum and several other vital defense metals, coupled with dwindling inventories, may cut output in the next year to 30% of the 12,000,000 sets sold in 1940. One major company already is making production plans on a 30-day basis.

Some officials feel there will be times during the emergency when manufacture of commercial sets will have to be practically halted, unless supplies of aluminum again become available for civilian purposes.

BAD TO WORSE

Although a small amount of aluminum was allotted to the radio trade in May, none had been received so far this month. According to defense officials, the situation is so critical that civilian consumers in the B-7 classification, which includes radio makers, probably will not receive much of the metal before late in the fall.

Copper, zinc, steel, nickel, tungsten, and aluminum, all under mandatory priority control of the Office of Production Management, are used in the manufacture of receivers, condensers, tubes, coils, and other radio parts. Aluminum is the most essential (6 sq. ft. of aluminum sheeting being used in the average set) and there is no acceptable substitute for the white metal in electrolytic condensers. Difficulties are also developing relating to bakelite and mica, among other products.

NOT LYING DOWN

However, judging from heated discussions, climaxed at the recent convention in Chicago of the Radio Manufacturers Association, the industry does not intend to take its classification "midway between toothpaste and hair tonic" lying down. The industry's attitude is summed up by one speaker, who declared that "people are important in any defense program, and in this radio communciations has no equal for continuous service, speed, and ready accessibility to every home in the land. Radio is not a luxury, like a lot of home appliances. It's a real downright essential to public security."

Speeches at the convention indicated that the industry will carry out a four-point program to keep radio in its proper important sphere: 1.—A drive for defense orders. 2.—Education of administrative and defense officials to the need of radio as an instrument for morale building. 3.—Exploration for substitute products to replace aluminum and other defense materials. 4.—Careful watch to avoid the distress of unbalanced inventories.

RADIO IMPORTANCE STRESSED

Appeal for association members to "get out and dig" for defense orders, and at the same time educate proper officials to the immense value of radio, was voiced by RMA President James S. Knowlson, of Stewart-Warner Corp. He also warned that the talents of radio engineers and technicians would be lost if the industry's present classification is continued.

Mr. Knowlson placed great stress on the value of radio as "one of the most merciless weapons of modern warfare," and pointed out that when Hitler wants to rally his nation he orders the people to "listen." "Morale is recognized as one of the great weapons of modern warfare," he declared. "The statistics of our own country show the terrific importance of radio in the dissemination of news and the forming of public opinion."

Formation of a committee to hunt for substitutes for vital defense materials to counteract shortages was proposed by Paul W. Galvin, chairman of the government relations and priorities committee. Warning that the industry is just beginning to have priorities trouble, Mr. Galvin said:

WORST IS YET TO COME

"Our shortages curtailing production today are not nearly as serious as they will be in months to come. And the worst part of this situation is that as time goes on and prospects for sales volume skyrocket, Uncle Sam is going to be saying more and more with greater emphasis, with the result that we're going to get less and less material.

Well-informed sources expect that after material inventories run out, in possibly sixty or ninety days, manufacturers will begin to feel the pinch of priorities orders on some of the metals essential to radio production and defense alike. At a time when radio sales are at a high peak and prices on the rise, manufacturing schedules are said to be undergoing revision to conform with materials outlook rather than consumer demand.

Too strict rationing of raw materials for commercial use would be harmful to the national economy for years to come, according to a statement by E. F. McDonald, Jr., Zenith Radio Corp. president, made in connection with the convention.

"The radio industry, by using substitutes, can get along very nicely with about a fourth of the aluminum it used last year, and it can reduce its consumption of nickel, but there are minimums beyond which we cannot go," he said.

"The radio industry represents $375,000,000 annually from the standpoint of retail sales," he continued. "Essentially, that boils down to the distribution of $375,000,000 in the form of labor payments and profits —about 95% for labor in one form or another and 5% for profit and taxes. Disrupt a $375,000,000-a-year industry and you are hurting labor.

"If private business is harmed by excessive rationing, so is its ability to make arms for the government."

SUBSTITUTE MATERIALS USED

One step toward independence of restricted materials has already been made by Stewart-Warner Corp. with introduction of a new line of receiving sets using substitutes for all basic materials needed in defense industries. Included in the line are several models, designed for use by military personnel.

Spurred by the huge rearmament program in Germany a few years back, a search has been going on for new materials for radio. In 1939, 130 tons of iron were saved in the manufacture of the new season's sets, it is estimated, under the four-year plan which called for every German industry to assist in the hunt for metals' substitutes.

These sets effected the following economies: A pressed-board chassis replaced iron; metal loudspeaker arm was replaced by one of wood; welding most connections and using a 40% tin content metal for soldering reduced use of tin; use of a new method of applying platinum-iridium cut from 25 to six grams consumption of platinum, used as contact material on wave length switches in superheterodynes (figures apply to platinum required for 2,000 sets.)

DEFENSE WORK INTERFERES

Probability that larger units in the industry will be requested to devote more of their activities to armament work supplies credence to shortage expectations. The 80-odd makers of radio sets have a $200,000,000 backlog of defense orders, largely held by the four biggest concerns.

One of these companies already has cut its cabinet-making department from 2,500 to 900 employes, it is said, and expects to sublet all cabinet work soon. It is reported that cabinet output is now being affected by production difficulties in the furniture industry and the threatened shortage of certain types of plastics.

It is because there are in use 53,000,000 radios, with an average life of 5 years, that OPM has classified their manufacture as a luxury industry and therefore non-essential. Trade officials are hopeful that sufficient materials will be assured for tubes and other replacement parts for existing sets. Radio-tube output currently runs about 400,000 a day.

Some of the large manufacturers expect defense orders for portable field apparatus and communication and electronic equipment for naval vessels and aircraft will offset curtailments in civilian output. Considerable economic dislocation will undoubtedly be felt by the small manufacturer unequipped to handle defense work, the 2,200 distributors, and the 57,000 retail outlets with their 150,000 employes.

TVA Suggests Public Save Power For Alcoa

KNOXVILLE, Tenn.—The consumers of electricity in the southeast can assist in the national defense program by conserving electrical energy, the Tennessee Valley Authority announced last week.

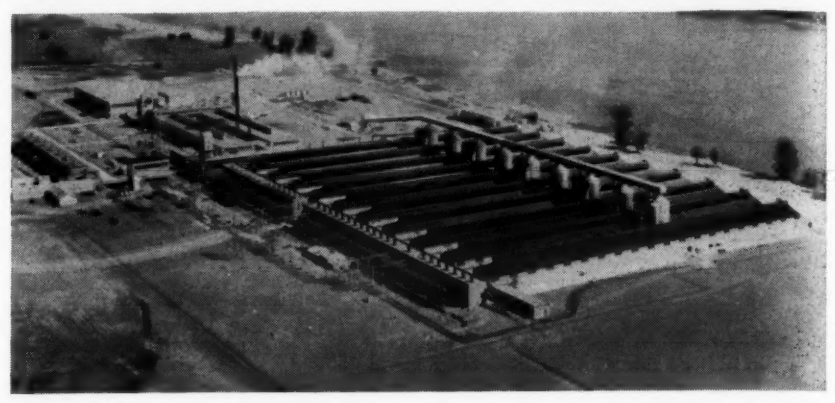
National defense requirements have placed a tremendous strain on power systems in the southeast, both public and private, but elimination of all unnecessary or wasteful uses of electricity will help meet the demand.

Drought conditions have caused a serious reduction in power available from the Aluminum Co. of America's generating plants and the TVA is making every effort to provide enough power to make up this deficiency and continue the company's Alcoa plant at full defense production.

Farm To Factory—In 15 Months

ABOVE—Cattle were grazing on this Columbia River farm near Vancouver, Washington, when this picture was taken on March 9, 1940.

BELOW—Just 15 months later, on May 29, 1941, a huge plant capable of producing 150,000,000 pounds of aluminum a year stood on this same site.



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Completion of New Aluminum Plant Hailed As Boon For Future as Well as Defense

VANCOUVER, Wash.—When late in May the switch was thrown to place into operation the final unit of the new Vancouver works of the Aluminum Co. of America it marked the completion on a site which just 15 months ago was a cow pasture, of a plant capable of producing 150,000,000 pounds annually.

This figure is highly significant when one considers that the total production of all aluminum in the United States did not exceed 130,000,000 pounds per year in the last World War, and that the entire industry in the United States did not produce 150,000,000 pounds a year until 1924. Yet the Vancouver Works will account for only a fifth of the metal to be produced by Aluminum Co. of America by midsummer of 1942.

"With the completion of one of the greatest aluminum operations in the country, the wisdom of Congress in developing the Columbia River over the objections of many skeptics becomes signally apparent," declared Administrator Paul J. Raver of the Bonneville Power Administration.

"Completion of this plant is significant in that it brings to the Pacific Northwest the beginning of a great new industrial development in the field of light metals. This development will do much toward stabilizing the income and economy of this region long after the national emergency is past."

Construction of the new plant began in March a year ago. At that time the plant was designed to deliver 30,000,000 pounds of aluminum a year. But the national need for aluminum became so great that the company decided to add other units as construction proceeded. Each unit was to have an annual capacity of 30,000,000 pounds.

The first unit went into operation last September, less than six months after the first concrete was poured. A second unit was completed in December. The third went into service in March, the fourth in April.

The work proceeded on schedule or ahead of schedule at all times. A bad scare was thrown into construction superintendents more than once, when delays put a temporary crimp into the construction program. The worst scare was experienced last fall when the Steel Tank & Pipe Co. of Portland suffered a severe fire.

The building in which this concern was assembling the steel reduction furnaces, known as "pots," for the Vancouver works, burned to the ground. Without these pots it would have been impossible to operate. But the Steel Tank & Pipe Co. not only delivered them according to schedule, it actually beat the schedule. The work on the pots was finished out in the open with the help of motor-driven truck cranes.

Once, in order to keep up with the schedule, which had been delayed for eight weeks because of a steel strike, a conveyor bridge was installed with five different crafts working on it at the same time. Steel workers, painters, carpenters, millwrights, and sheet metal workers were at various points of the bridge.

On another occasion, a carbon baking furnace was under construction below a temporary roof before the steel for the permanent building arrived. In order to produce 150,000,000 pounds of aluminum a year, a carbon electrode plant has been installed to make the special type of carbon electrodes required.

When work was begun on the plant in March, 1940, there were 39 persons on the construction payroll. Today there are more than 800 permanently employed in the manufacture of aluminum. The plant was officially opened on Sept. 3, in the presence of Gov. Charles A. Sprague of Oregon, and the first unit went into operation on Sept. 17.

The construction of the Vancouver works is part of an expansion program which approximates $200,000,000. When the program is completed in midsummer 1942, Aluminum Co. of America will be able to more than double its peak peacetime production of 1939, when more than 327,000,000 pounds of aluminum were made.

The Vancouver Works is one of five aluminum-producing plants of Aluminum Co. of America. In addition to these, the company has 12 other plants in which the metal is processed.

Since more electricity is consumed in the production of aluminum than in any other industry, large amounts of electrical power are needed.

THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices: Waterbury, Conn

FROM
¼ to 25 TONS
OF REFRIGERATION

Brunner Refrigerating and Air Conditioning equipment comprises air and water cooled condensing units for practically all types of commercial applications up to and including 25 tons of refrigeration. Catalog promptly on request. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

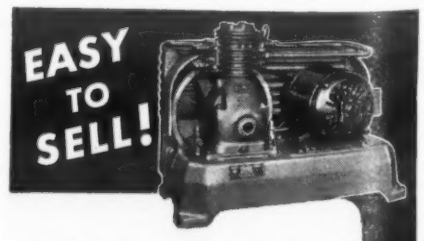
BRUNNER
FOR YEARS THE SYMBOL OF QUALITY

Efficient, sturdy and economical. Provides safer handling and thorough protection of refrigerators. Pad and harness are separate units and both adjustable to practically all styles and sizes of cabinets.

Adjustable Pad $10.00 each
Adjustable Harness $6.50 each f.o.b. Chicago. Lettering on pad at only $1.00 per order extra

Write for latest folder and prices on pads for refrigerators, washers, ironers, ranges, radios, etc

BEARSE MANUFACTURING COMPANY
INCORPORATED 1921
3815-3825 Cortland Street, Chicago, Illinois



More than 20 years of high reputability...in every kind of refrigeration service...has established the name "Lipman" as a BUY word that breaks down sales resistance. Make this reputation your sales asset . . . for greater profit and better customer satisfaction.

Lipman
GENERAL REFRIGERATION DIVISION
Yates-American Machine Co.
Dept. AC-1 · Beloit, Wisconsin

England Still 'Delivers Goods' To New Zealand Despite War

Trade Barriers Also Continue To Restrict U. S. Exports 'Down Under,' Hancock Reports

J. Russell Hancock, Ltd.
49-51 Courtenay Place
Wellington, C. 3. New Zealand

Gentlemen:

As in the case of my last report, this is written on both sides to conserve paper supplies and to reduce mail space.

Lease and Lend Bill. In common with the other units of the British Empire, we in New Zealand appreciate and are grateful for the help which the United States is giving and proposes to give in protecting the liberty and safeguarding the way of life of all the democratic peoples.

There is a big job on hand, and we must be prepared to set everything else aside until it is finished. Clear-headedness as well as courage are called for. While the democracies must be prepared to fight to the last man, they must never lose sight of what they are fighting for.

When the immediate danger to our liberty and our lives is averted, that is only the first step. There still remains the task of reorganizing international affairs on a reasonable and practicable basis; a task for all the peoples, once the issue has been decided whether force is to prevail or right and reason.

Universal political and economic liberty is essential to peace and order. But it is not possible to have such liberty until there is an impartial international and non-political organization which is sufficiently powerful to govern in the international sphere, and to guarantee the world's peoples against aggression or interference from one another.

Unless this organisation is truly impartial, it will never gain the confidence of the peoples of the world, and if it is not truly international, no major nation will consent to be "protected" by it. If it is political, it will be opposed by all the peoples who have different political views and needs.

By its failure alone, the League of Nations performed a magnificent service for humanity, since it provided us with much material upon which to study the principles and practice of international collaboration. If we can understand the lesson to be learned from the League's collapse, from the two great world wars, and from the chaos of the intervening "peace," then the sacrifices which have been made and are being made, will not be in vain.

Deliveries from the United Kingdom. We have had enquiries from several American manufacturers recently, (including some whose products are on the New Zealand Government's restricted or prohibited lists) asking why there has not been a substantial increase in their business, in view of the difficulties with which British manufacturers are faced.

We represent a number of "key" automotive and industrial manufacturers in the United Kingdom, and, with one exception, they are delivering very well indeed—in most cases almost as usual. Very few shipments have been lost en route, although it takes rather longer than before the war, for the goods to get here. We do not suggest that our experience is universal. No doubt these factories have certain plants which cannot be adapted to the production of those major war supplies which Britain needs so urgently.

It is nevertheless a fact that U.K. manufacturers are supplying large quantities of goods for this market, and that British shipping is getting the goods here. The main object of Britain's export activity is to gain overseas exchange, and we know that the needs of Britain's own civil population have been sacrificed to make it possible.

So much for the past and the present. The situation may change now that fewer ships are available for trading between the United Kingdom and these distant Dominions. The immediate future for New Zealand's international trade is not very promising, as it appears that we shall not be able to export a large proportion of our staple products. All we can say is that we shall not be found complaining about any measure, or any condition, which is essential to the successful prosecution of the war.

Meanwhile, New Zealand is continuing to draw its supplies from the United Kingdom as far as is reasonably practicable. While U.K. manufacturers can supply our needs, the Government of New Zealand will not issue licenses for importation from other sources. If there is delay in delivery or in arrival, we just have to do without, temporarily. We are in any case doing without many items which were imported into New Zealand before the import restrictions came into effect.

In cases where British manufacturers definitely state or conclusively demonstrate that they are unable to supply, the New Zealand Government appears to be issuing licenses for importation from other parts of the British Empire, or from the United States, if the product is of sufficient national importance. A notable example is steel, for which special licenses for importation from the United States have been issued for many months.

If it is in future impracticable or impolitic for British factories to ship to this territory, then we presume the Government here may issue further licenses for the importation of American goods.

There are, however, two other factors to be considered. The first is: Is there shipping space available to bring the goods from the United States? The second is: If we buy more goods from the United States, how are they to be paid for?

The New Zealand Government will not issue licenses until the dollar funds are in sight to pay for goods imported. How are we to get the necessary dollar funds? This question may have been dealt with in recent American legislation, or loans may be under consideration at the present time. If not, my arithmetic tells me that we shall be unable to buy very much from the United States, unless we can sell to the United States in order to raise the necessary dollar currency.

At present our cool stores are crammed with meat for which we need a market, and we are also anxious about our butter. I imagine we can land meat and butter in the United States at very much lower costs than they can be produced in the United States. On the other hand, New Zealand is producing washing machines, refrigerators, and many similar articles—surprisingly good machines, too—but the retail price is about two or three times the retail price of similar machines in the United States.

This is all "screwy," but it is the way things are. The barriers to international trade are a contributing (though secondary) cause of the war, and their effect upon the internal economy of states is much more grave than is generally realised. These barriers cannot be cleared away, however, until there is an international authority capable of guaranteeing the security of nations, since Customs Tariffs and restrictions are an integral part of defence measures of every nation.

Fifth Period Licensing Schedule. Fifth Period licensing schedule is attached. This should be read in conjunction with the Third Period schedule which you have had from us, and it cancels the Fourth Period schedule sent you with our letter of 16th April, 1940.

Period. In the past import licenses have been issued for importations over a six months' period. This has been productive of some inconvenience, and in future it appears to be the intention of the Government to issue licenses for a twelve months' period. It will be noticed that the Fifth Period licenses extend for the whole of the year 1941.

The six months' licensing period usually resulted in a rush for two months, while importers purchased against their licenses, and a quiet period of four months during which no one had any license with which to buy. We are interested to see whether the twelve months' licensing period will enable importers to space their orders better, or whether there will be a rush for two months and a slow ten months. Since the licenses are inadequate for the country's needs, there will probably be a tendency to use them up quickly.

Business generally. Stocks are short and business is as good as it is possible for it to be under such circumstances. We could sell very much more than we are selling today, but the whole position is governed by import licenses, deliveries, and shipping.

Australian Organisation. Will you please note the **new** address of the main office of our Australian organisation:

J. Russell Hancock (Australia) Pty. Ltd., 62 Lucas St., Camperdown, Sydney.

Ourselves. Our organisation has been appointed to represent several quite important locally-made lines—nothing, however, which clashes with the interests of existing overseas principals. We are rather proud of our local connections, since they indicate the rating we have locally as a sales force, quite apart from our standing as representatives of overseas manufacturers.

J. RUSSELL HANCOCK

How New Zealand Is Restricting Refrigeration Imports This Year Under New Schedule

Specification	Tariff Item	Imports reduced by British	O.B.	Foreign
Refrigerators and compressors	353(6)b	On application		
Boilers, furnaces & radiators for central heating and equipment therefor	356(1)b	50	100	100
Blowers and fans—ventilating	351(4)	N.R.	100	100
Compressors, Ammonia	353(2)	100	100	100
Copper tubing for refrigeration—plain	362(3)	On application		

Editor's Note: Schedule is based on imports in 1938. 100 means 100% prohibition; N.R., no reduction. "On application" means each application will be considered individually on its merits.

SPANISH SERVICE MANUAL

ON HOUSEHOLD REFRIGERATION

All-Spanish Translation of Master Service Manual No. 1

Tables in Metric and English Units

All Mathematical Data in Both Metric and English Units

BIBLIOTECA DE REFRIGERACION

REFRIGERACION DOMESTICA

Manual de Instalación y Servicio

MANUAL NO. HS-1
Por K. M. Newcum

Latin-American Edition of K. M. Newcum's Best Seller

Household Refrigeration Installation and Service Methods

Conversions of Standard Tons of Refrigeration in Kcals. and B.t.u.

Pressure-Temperature Relations of Common Refrigerants

Teoría de la Refrigeración

Principios de la Refrigeración

Refrigerantes Más Comunes

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Dairy Industry Offers Vast Opportunity For Sales of Refrigeration

Milk Products Require Cooling Most of the Way From Cow To the Ultimate Consumer

Modern Refrigeration Widens the Farmer's Market, Texas Food Conference Told

AUSTIN, Tex. — A wide open opportunity for the development of refrigeration equipment to fit certain specialized needs of the dairy products industry and for the marketing of a great variety of standard refrigeration products to firms engaged in various phases of this industry was pointed out by Kenneth M. Renner, head of the department of dairy manufacturers at Texas Technological College, when he addressed the University of Texas food preservation conference here.

POSSIBLE IMPROVEMENTS

Speaking on "Refrigeration Requirements In the Processing and Marketing of Milk and Milk Products," Mr. Renner analyzed the existing conditions and made pointed suggestions for future improvement.

"The modern history and widespread development of the dairy industry in America has been made possible to a large extent by the advancements that have been made in refrigeration," Mr. Renner declared.

"Modern refrigeration has made it possible for the farmer in Texas to supply butter, cheese, and other dairy products to consumers in the most remote part of this or any other country. It has made possible not only national but international trade for a product rightfully classified as highly perishable.

"With the continual discovery of new refrigerants and the application of engineering skill, it is now possible for the average housewife to enjoy the benefits of superior food protection, thus helping to solve one of the dairy industry's most difficult problems—that of the proper care of dairy products after they have been delivered to the consumer.

NEEDS OF INDUSTRY

"In considering the refrigeration requirements for dairy products," Mr. Renner continued, "I will try to point out some of the more important facts from the standpoint of the needs of the dairy industry, and the effect that refrigeration has on quality of dairy products. I shall not attempt to give a technical discussion of equipment and operations.

"During recent years the use of mechanical refrigeration has become more popular on our dairy farms. The main reasons for the popularity of the mechanical refrigeration system as compared to the use of ice is as follows:

"1. Automatic in its action.

"2. Insurance of a more constant temperature.

"3. Less danger of contaminating the milk.

"4. Actually cheaper in most instances over a period of years.

CUTS COOLING COSTS

"The Oregon Experiment Station conducted a series of experiments comparing ice and mechanical refrigeration systems. Their results showed that the cost of cooling night milk by means of ice from 95° F. to 35° F. and holding over night, and cooling morning milk from 95° F. to 45° F., amounted to 22.8 cents for each 100 pounds of milk.

"Under temperature conditions similar to the above, but when the milk was pre-cooled over a tubular cooler with cold well water to a temperature of 70° F., it cut the cost of cooling 100 pounds of milk to 14.2 cents.

"The estimated cost of cooling 100 pounds of milk by mechanical refrigeration, including power, depreciation interest, etc., was a minimum of 6 cents.

"The above costs will naturally vary in different sections, dependent upon the cost of ice and electric power. In this case ice was figured at ½ cent per pound and electricity at 3 cents per kwh.

RATE OF COOLING

"The rate of cooling between the dry cold storage box and the wet cold storage box is as follows. In each case the milk was pre-cooled to between 65 and 67° F. over a tubular cooler with cold well water.

	1 hr.	6 hrs.	12 hrs.
Dry storage, natural circulation	...	58° F.	50° F.
Dry storage, forced circulation	...	51° F.	42° F.
Wet storage, still water	55° F.	...	...
Wet storage, circulating water	45° F.	...	...

"The milk was all cooled in 10-gallon cans.

"Obviously dry storage is not practical for quick cooling of milk in cans, and especially where it is necessary to cool the morning milk to a low temperature before delivery.

"Capacity of the wet storage system should be such that there is approximately 1.9 to 3 gallons of water for each gallon of milk to be cooled. Capacity of the box should be such that for a wholesale dairy the unit should have a 10 pound ice melting capacity each 24 hours for each gallon of milk cooled. If the milk is pre-cooled to 65-70° F. with cold well water, the capacity may be lowered to 7½ pounds ice melting capacity.

"The cost of cooling milk is dependent to a certain extent on the quantity of milk to be cooled. As the volume of milk to be cooled increases the cost decreased.

"From the standpoint of the refrigeration requirements in the processing of market milk, the size of plant, methods of operation, and marketing will influence to a large extent not only the refrigeration requirements but the type of refrigerant as well.

COOLING REQUIREMENTS

"In most milk plants no refrigeration is required until after the milk has been pasteurized and ready to be bottled. The milk should be cooled at this point to a temperature of 40° F. or below if possible, and maintained at that temperature until delivered to the consumer.

"Regardless of the type of refrigerant used, care should be exercised to prevent freezing the milk on the cooler coils. Freezing milk definitely lowers the quality of its flavor, and in many instances renders it more susceptible to oxidized flavor development. Milk storage temperatures of from 36 to 40° F. are desirable for bottled milk. A maximum cream line will form in approximately 6 to 12 hours on pasteurized milk at this temperature range. Bacterial development will be negligible.

PROBLEM OF DELIVERY

"The problem of proper refrigeration of milk while on the delivery route is one that needs attention. The use of ice bunkers, ice sacks, and direct icing of the milk cases are common methods used. All are wasteful and messy. The development of a low cost mechanical unit driven from the truck motor and an insulated body would assist the industry to deliver milk during the warm months in a much more sanitary and heathful manner.

"Adequate refrigeration of milk in the store and home is another problem. Very few refrigerators in stores are kept at a temperature sufficiently low to protect milk over a very long period of time.

"Experimental work is being conducted on the freezing of fresh milk for export as well as domestic use. Complete data is not available, but results to date indicate that fast freezing, concentration of the milk solids by condensing the milk, and homogenization of the milk play an important part in producing a product which when thawed will not cause the butterfat to oil off. Data does not indicate that the nutritional value of the milk is injured by freezing.

FRESH FROZEN MILK

"Should fresh frozen milk become a standard article of commerce, mechanical refrigeration will play an important part in the marketing of the commodity.

"Evaporated and sweetened condensed milk require refrigeration only during the time the incoming milk is being held before condensing, and the cooling and storage of the condensed product before final processing.

"Requirements for refrigeration in a butter manufacturing plant may be listed as follows:

"1. Cooling of cream after pasteurization to churning temperature.

"2. Holding cream at churning temperature the desired length of time.

"3. Cooling wash water in hot weather.

"4. Chilling the butter preparatory to printing.

"5. Holding printed or tub butter in storage.

COOLING OF BUTTER

"Since the volume of product handled in the average butter plant varies from day to day, it is very necessary to determine the peak production load that it will be necessary to handle in a given 24-hour period. Temperature requirements for storage rooms will vary from just above freezing in the chilling room to 0° F. or below in rooms where butter is to be stored over long periods of time.

"Refrigeration requirements for cheese vary considerably. Since American or Cheddar cheese is the most common, here are the temperature requirements generally given for curing that type of cheese:

"1. Quick ripening, two to three months, curing room temperature 50-60° F.

"2. Slow ripening, four to six months, curing room temperature 40° F.

"3. Aged cheese, nine to 12 months, curing room temperature 33-34° F.

FREEZING CHEESE

"The lower the temperature the longer it will require for the cheese to cure. The fast freezing of ripened cheese as a means of preservation until marketed has received some attention. There is no appreciable alteration in flavor. However, when the frozen cheese is thawed out the body shows a very definite tendency to dry out rapidly and become coarse and crumbly, making the cheese very difficult to market.

"Refrigeration requirements for ice cream are probably more complex than for any other dairy product. The following points must receive careful attention:

"1. Cooling of the ice cream mix.

"2. Storage requirements for ice cream mix.

"3. Freezing the ice cream.

"4. Hardening of ice cream after freezing.

"5. Protection of ice cream during shipment.

"6. Protection of ice cream in dealer's cabinet.

MAKING ICE CREAM

"It is a well known fact that in general a high solids mix, which contains a proportionately larger amount of sugar than a low solids mix, has a lower freezing point, and as a result requires not only more refrigeration in order to freeze the ice cream, but also to harden it in the hardening room and in the dealer's cabinet.

"In order to produce ice cream with a smooth body and texture, many factors must be considered, but among the factors which have an important bearing is that of rapid freezing of the ice cream mix.

"The ice cream mix should be cooled immediately after mixing to a temperature below 40° F. and held at a low temperature until frozen. The lower the temperature of the ice cream mix, the less time will be required to freeze. The instantaneous freezing which takes place in the continuous ice cream freezer, and the smooth body and texture which results, offers definite proof of the value of fast freezing.

ICE CREAM HARDENING

"Ice cream should be hardened as rapidly as possible after it has been removed from the freezer. It is desirable that the hardening room temperature be very low. Where separate rooms are available for storage of fresh and hardened ice cream, the soft ice cream from the freezer should be hardened at a room temperature of —18 to —20° F. preferably with a fan in the room to keep the air in circulation.

"A number of plants use a hardening tunnel for package ice cream in which a temperature of —30° F. is maintained, the package ice cream hardening in approximately 45 minutes. After hardening, which requires from six to 12 hours in the low temperature room, the ice cream is removed to the storage room which is kept at a temperature of approximately —10° F.

TRANSPORTING ICE CREAM

"Ice cream handled in the above manner may be stored for several months without losing any of its desirable qualities.

"The problem of maintaining adequate refrigeration during the marketing process is a serious one. Ice cream is shipped long distances, and in many cases is hauled all over the country in trucks. Late model trucks have well insulated bodies and even mechanical refrigeration systems which can be operated either from the truck motor or any 110-220 volt power line. Others use dry ice, and some use a very cold brine.

"Main point to consider is the cost of the truck and the temperature that must be maintained. The temperature of the ice cream should never get above 10° F. while in shipment. If it does the body and texture will suffer.

"The problem other than transportation is that of storage in the dealers' cabinets. The temperature of serving ice cream affects not only the consumer's preference, but also the shrinkage from dipping the ice cream. As a rule this temperature varies from 10 to 16° F.

"In summing up the refrigeration requirements for dairy products in the processing and marketing field, one should consider the general effects of the following general factors on refrigeration requirements:

"1. The type of product that is to be refrigerated, and the specific requirements with respect to temperature control of the product.

"2. The methods employed in the processing of the product.

"3. The peak load in any one day's operation.

"4. Type of equipment being used in the plant.

"5. Methods of marketing the product.

Portable Quick-Freezing Unit Undergoes Tests With Strawberries

BIRMINGHAM, Ala.—A portable quick-freezing unit developed by the Tennessee Valley Authority has been set up here for experimental use in connection with the strawberry packing operations of Southern Frosted Foods, Inc. It also is being tried out elsewhere on other berries, peaches, and vegetables.

Idea behind the development of this unit was that it would be suitable for stationary use by the smaller locker plants, or for mounting on wheels so that it could be taken from farm to farm for on-the-spot freezing of produce which then would be stored in the nearest locker plant.

TVA officials plan to make a commercial unit patterned after this experimental freezer available by 1942.

The unit employs the immersion process of freezing. Berries or other foods to be frozen are placed into two metal containers and the liquid refrigerating medium, which in this case is glycerine, is circulated through and over the produce. Berries are quick frozen in about 6 minutes. The liquid is then drained off and the berries are dried by centrifugal action of the containers.

The unit has a capacity of 100 lbs. per hour. J. O. Tankersley of the TVA is in charge of the experimentation.

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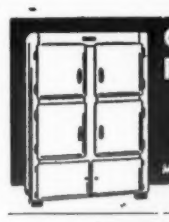
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Servicing Ice Cream Cabinets and Other Low Temperature Equipment

By Arch Black and Dean C. Seitz

Editor's Note: This is the sixth instalment of a new section on ice cream cabinet servicing in the series of articles which cover servicing of all types of low temperature refrigeration equipment for use in retail business.

Service Complaints on Low Side Float Systems (Cont.)

COMPLAINT No. 4—Machine runs too much of the time—ice cream either too hard or satisfactory (Cont).

Cause No. 13—Pitted control contact.

Burned and pitted switch contacts will cause the switch to stick and produce excessive refrigeration. The condensing unit will run either too much or continuously. The switch contact should be cleaned by using a very fine emery cloth. Never oil the contact points.

Cause No. 14—Defective control.

If the control is defective the only remedy is to remove it and replace with a new one.

Cause No. 15—Cabinet in too warm location.

For this trouble there are two possible remedies. First, a larger condensing unit may be installed in a cooler location, and second the customer may be sold on moving the entire cabinet in the interest of reduced operating costs.

Cause No. 16—Abnormal bottle cooling load.

On a combination ice cream cabinet and bottle cooler, this problem will result when an unusually large supply of bottle goods are loaded into the bottle storage compartment by the owner.

The only remedy is to convince the owner of the cabinet that he should purchase a separate bottle cooler since he is exceeding the capacity of his combination cabinet.

Cause No. 17—Low voltage.

Previously covered under Complaint No. 2, cause No. 10.

Cause No. 18—Motor trouble.

Under this heading falls such problems as the frequency of the motor being different from that of the power line. In general such motor problems as motor brushes making poor contact, rough or dirty commutator, governors broken or clogged, and motor armatures short circuited can be most readily corrected by replacing the entire motor.

COMPLAINT No. 5—The machine short cycles.

Cause No. 1—Leaky float valve.

A very badly leaking float valve will cause continuous operation of the condensing unit. A lesser amount of leak will produce short cycling. A leaky float valve is always accompanied by a frosted suction line.

The remedy is to remove the float valve and replace it with a new one.

Cause No. 2—Leaky compressor discharge valve.

This point comes under the general heading of compressor inefficiency. It has been covered under Complaint No. 1, cause No. 8.

Cause No. 3—Air in the system.

Air in the system will result in excessively high condensing pressures. These high pressures will result in short cycling on the high pressure cut out.

The only remedy is to purge the system until the air has been removed and the condensing pressure returned to normal.

Cause No. 4—Dirty strainer.

A dirty strainer will permit insufficient supply of liquid refrigerant to pass through it. This will permit the cut-out point of the condensing unit to be reached before the brine temperature has been lowered to the proper degree. As quickly as more liquid refrigerant leaks through the dirty strainer the pressure will be raised in the evaporator, causing the condensing unit to again cut in quickly.

The remedy is to remove the strainer, clean it, and replace.

Cause No. 5—Inadequate condensing medium.

If either too warm a condensing medium or insufficient supply is provided for the condensing unit, it will short cycle on the high pressure cut out.

The remedy has been discussed under Complaint No. 4, cause No. 7.

Cause No. 6—Pinched suction line.

A pinched, kinked, or flattened suction line will produce an excessive pressure drop. This pressure drop may be sufficient to allow the cut-out point of the condensing unit to be reached before the evaporator temperature has been reduced accordingly. Remedy is to replace the pinched suction line with a new one.

Cause No. 7—Oil-bound boiler or evaporator.

An oil-bound boiler or evaporator may be very deceiving. The system may be working on normal cycles when suddenly without any apparent reason it will start to short cycle (when a pressure type control is used). The short cycling will result in temperature in the cabinet rising high enough to permit soft ice cream. Frequently after the temperature has reached this high point, the system will go back to normal cycle.

This entire condition is caused by the inability of the refrigerant to break through the blanket of oil which will float on the top of a sulphur dioxide boiler. A compound gauge will usually show that the cut-in pressure remains correct, but that the suction pressure drops to the cut-out point in about one minute.

If the control is held in for a few moments, the suction pressure will jump quickly to about 5 inches and from then on the condensing unit will run normally through that cycle. If the pressure control is adjusted low enough to have the refrigerant break through the oil blanket, this setting would be too low and the ice cream would be too hard.

This condition of an oil bound boiler may be caused by an improperly calibrated float valve, but it can also occur on a perfectly calibrated one.

Various manufacturers have different remedies for this condition. One manufacturer recommends the insertion of ebulators in each of the boiler tubes. Other manufacturers recommend discharging the entire system of both its refrigerant and oil and starting over again. It is recommended that the service engineer follow the specific recommendation of the cabinet manufacturer when this condition is encountered.

Cause No. 8—Very low brine level.

If the brine level is very low the heat transfer from the brine to the evaporator will be poor because only a portion of the evaporator is immersed in the brine. As a result the cut-out point of the condensing unit will be reached before the brine has been properly cooled.

The obvious remedy is to fill up the brine tank with the proper amount and density of brine. Always hunt for the cause of the brine leak before leaving the installation.

Cause No. 9—Pressure or temperature control switch does not latch when the control cuts in.

A switch which does not latch properly may be either repaired in the field or replaced with a new one.

Cause No. 10—Control set on too close a differential.

This point can be readily checked by installing a gauge in the suction line and comparing the cut-in and cut-out points of the condensing unit with the recommendations of the manufacturer.

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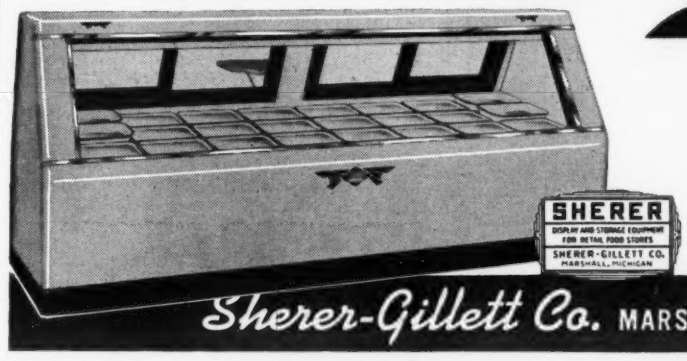

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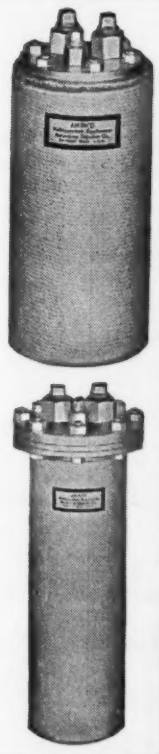

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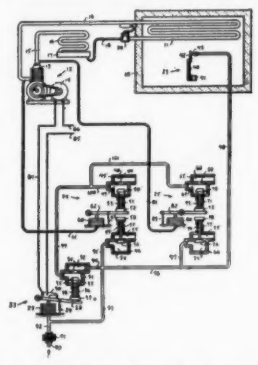
PATENTS

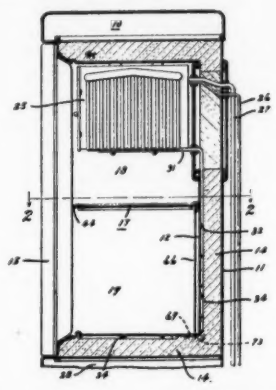
Weeks of June 10 & 17

2,244,890. REFRIGERATION CONTROL SYSTEM. William L. McGrath, St. Paul, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application Dec. 31, 1938, Serial No. 248,681. 24 Claims. (Cl. 62—4.)



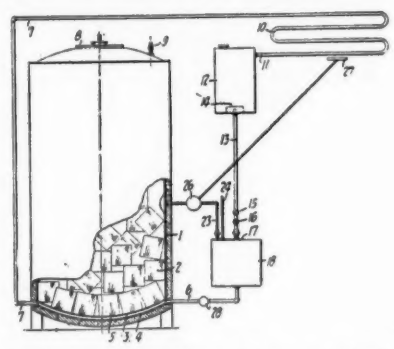
1. In a control system for a refrigerating apparatus having a compressor and evaporator means for performing a cooling function, the combination of, control means for controlling the operation of the compressor, pressure operated means for operating the control means, a source of fluid under pressure, first and second valve means for controlling the supply of fluid from the source to the pressure operated means, means responsive to a temperature condition produced by the evaporator means for controlling the first valve means to operate the compressor upon a call for cooling, and means responsive to suction pressure for operating the second valve means to prevent starting of the compressor until the suction pressure increases to a defrosting value.

2,244,900. REFRIGERATING APPARATUS. Frank P. Starr, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application July 20, 1939, Serial No. 285,563. 7 Claims. (Cl. 62—103.)



1. In refrigerating apparatus, the combination of a structure defining first and second zones to be refrigerated, means for cooling the air in the first zone to a low temperature, means for cooling the air in the second zone to a temperature higher than the temperature of said first zone, and means responsive to the accumulation of a predetermined amount of condensation from the air in one of said zones for establishing communciation between the zones.

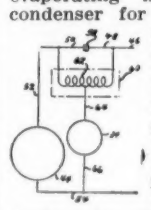
2,244,904. REFRIGERATION SYSTEM. Harry A. B. Brown, San Francisco, Calif. Application May 1, 1939, Serial No. 271,052. 4 Claims. (Cl. 62—91.5.)



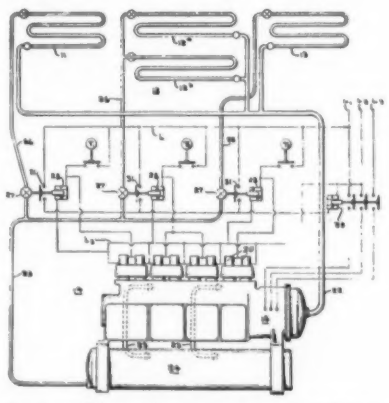
1. In a refrigeration system, a primary refrigerant composing a body of solid CO_2, a container in which said body is enclosed fitted with a hollow bottom having one of its walls disposed in heat exchange relationship with the said CO_2 and supporting the solid CO_2 thereon, an inlet and an outlet to the space between the walls forming said hollow bottom, a cooling coil, a first conduit leading from said outlet to one end of said cooling coil and a second conduit leading from the opposite end of said cooling coil to said inlet, said second conduit including a circulation control chamber, a gas pressure line communicating between said chamber and said container for conducting CO_2 gas resulting from evaporation of said solid CO_2 to said chamber.

2,245,049. REFRIGERATING APPARATUS. George C. Pearce, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application July 28, 1939, Serial No. 287,108. 4 Claims. (Cl. 62—4.)

2. Refrigerating apparatus including an evaporating means, a compressor and condenser for supplying liquid refrigerant to and for withdrawing evaporated refrigerant from said evaporating means, a main driving motor for driving said compressor, an auxiliary motor for circulating a medium in heat exchange relation with the evaporating means, a set of conductors for conducting electric energy to the terminals of the main driving motor, a switch mechanism including contacts connected in series with one of the conductors for stopping the main driving motor and compressor, an auto-transformer including a reactance coil shunted around said contacts of said switch mechanism with its ends connected to said one conductor upon opposite sides of said contacts, said auxiliary motor having one terminal connected to a tap on the reactance coil of the auto-transformer and the other terminal connected to another conductor of said set.

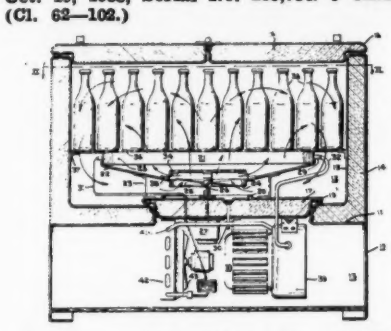


2,245,053. REFRIGERATING APPARATUS. Charles M. Sanders, Jr., Oak Park, Ill., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Appliction Sept. 3, 1938, Serial No. 228,299. 11 Claims. (Cl. 62—4.)



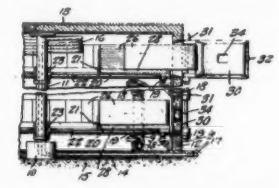
1. A refrigerating system comprising a plurality of evaporators, a compressor comprising a plurality of compressor elements, a motor for driving said compressor, means associated with one evaporator for initiating and terminating flow of refrigerant thereto automatically in response to a load condition thereof and simultaneously therewith loading and unloading, respectively, one of said compressor elements.

2,245,234. COOLER FOR BOTTLED BEVERAGES. Elo C. Tanner, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Oct. 19, 1938, Serial No. 235,734. 6 Claims. (Cl. 62—102.)



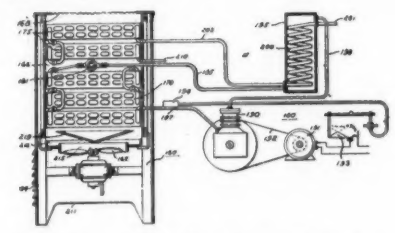
1. In a dry cooler for packaged beverages and the like, the combination of an insulated chamber, a foraminated metal false bottom therein having a central portion and a border portion, a metallic cooling unit below and in contact with the central portion of said false bottom, said cooling unit having vertical air passages therein, and means for circulating the air in said cabinet through said air passages and through the foraminations in the false bottom above said cooling unit, said air returning through the foraminations at the border portion of the false bottom.

2,245,300. ROTARY REFRIGERATED LOCKER SYSTEM. William J. Ruttan, Hawarden, Iowa. Application Jan. 7, 1941, Serial No. 373,508. 4 Claims. (Cl. 62—89.)



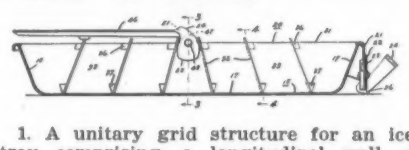
1. A locker refrigerator comprising a base, a post mounted thereon, a cylindrical insulated wall disposed concentric with the post, insulated top and bottom walls connected with the cylindrical wall and forming a refrigeration room, circular tracks mounted at vertically spaced intervals adjacent to the inner surface of the cylindrical wall, turntables supported on the post and tracks for rotation on the post as an axis, a plurality of radially slidable lockers supported upon the turntables, a service door in said cylindrical wall opposite each turntable through which the lockers of the respective turntable may be selectively slid to facilitate removal of the contents.

2,245,439. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Original application July 31, 1933, Serial No. 682,977. Divided and this application Feb. 23, 1939, Serial No. 257,920. 3 Claims. (Cl. 62—8.)



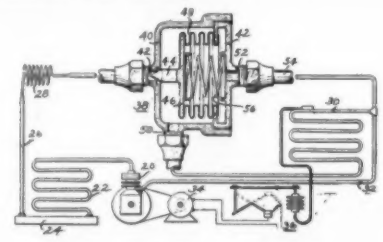
1. Air conditioning apparatus for a room or the like comprising in combination, a cabinet adapted to be mounted within the room, an air treating zone in the upper portion of said cabinet, a refrigerant evaporator in said zone, a water circulating coil in said zone, air circulating means disposed beneath said zone, a condensate collecting shield disposed between said air treating zone and said air circulating means, an air inlet opening in said casing adjacent said air circulating means, an air discharge opening above said air treating zone.

2,245,440. REFRIGERATING APPARATUS. James W. Jacobs, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application May 26, 1939, Serial No. 275,943. 8 Claims. (Cl. 62—108.5.)



1. A unitary grid structure for an ice tray comprising, a longitudinal wall, a plurality of spaced apart walls extending transversely to said longitudinal wall and individually interlocked therewith for movement within fixed limits thereupon, said walls cooperating with the tray to form compartments in which a liquid is frozen into ice blocks, and movable means permanently attached to said grid for engaging and moving one of said transverse walls relative to said longitudinal wall and to move other of said transverse walls relative to said longitudinal wall by reason of force transmitted through ice blocks in said compartments.

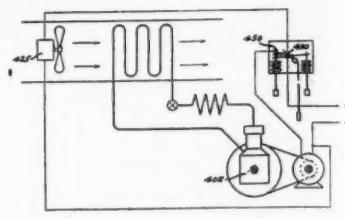
2,245,454. REFRIGERATING APPARATUS. Marshall W. Baker, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Sept. 24, 1937, Serial No. 165,552. 11 Claims. (Cl. 62—3.)



1. A refrigerating system comprising a plurality of evaporators, a compressor comprising a plurality of compressor elements, a motor for driving said compressor, means associated with one evaporator for initiating and terminating flow of refrigerant thereto automatically in response to a load condition thereof and simultaneously therewith loading and unloading, respectively, one of said compressor elements.

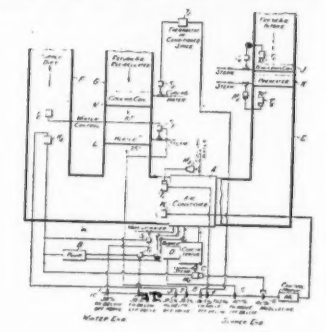
1. Refrigerating apparatus including liquefying means and evaporating means, valve means responsive to the pressure differential between two portions of the evaporating means for controlling the flow of liquid refrigerant from the liquefying means to the evaporating means, and a means forming an elongated orifice located in series circuit relation to the valve means for additionally controlling the flow of liquid refrigerant from the liquefying means to the evaporating means.

2,245,455. REFRIGERATING APPARATUS. Francis R. Bichowsky, Ann Arbor, Mich., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Original application Oct. 29, 1932, Serial No. 640,228. Divided and this application Jan. 7, 1938, Serial No. 183,875. 2 Claims. (Cl. 62—6.)



2. Air conditioning apparatus for an enclosure comprising in combination an evaporator, refrigerant liquefying means for supplying liquid refrigerant to said evaporator, means for effecting thermal exchange between a stream of air and refrigerant in said evaporator, control mechanism for said apparatus for maintaining the effective temperature in said enclosure within a predetermined comfort zone, said control mechanism comprising means responsive to one function of the effective temperature of air, means responsive to another function of the effective temperature of the air, means responsive to the joint action of the aforesaid means for controlling said means for effecting said thermal exchange and means responsive to one of said functions for controlling said refrigerant liquefying means for limiting said effective temperature within said comfort zone.

2,245,464. CONTROL OF AIR CONDITION. Stewart C. Coey, Glen Ridge, N. J., assignor to Research Corp., New York, N. Y., a corporation of New York. Application Jan. 21, 1937, Serial No. 121,663. 12 Claims. (Cl. 236—44.)

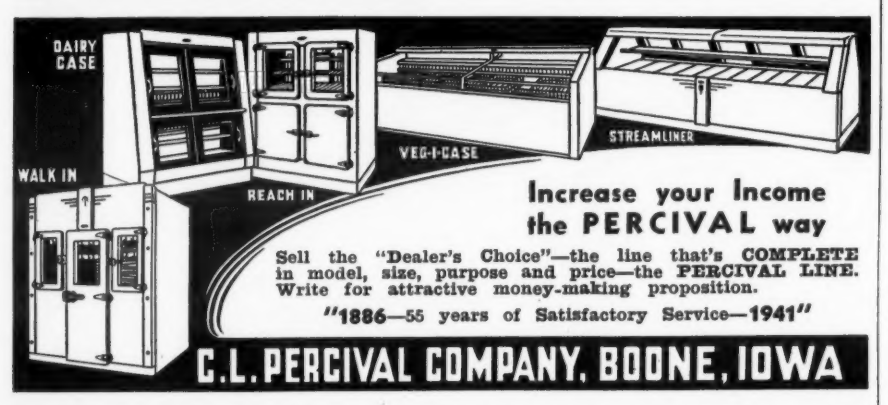


2. In a system for controlling the operation of air conditioning apparatus in which air is contacted with a hygroscopic liquid, a humidity-sensitive element in contact with air leaving the hygroscopic liquid and means responsive to said humidity-sensitive element for bringing into and out of operation means for supplying heat and water to said hygroscopic liquid for adjusting the aqueous vapor pressure thereof.

2,245,691. OPERATING MECHANISM FOR REFRIGERATOR CONTROLLERS AND OTHER DEVICES. Clarence W. Kuhn, Wauwatosa, and Allan P. Charbonneau, Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware. Application Aug. 7, 1937, Serial No. 157,988. 8 Claims. (Cl. 297—9.)

1. In an operating mechanism for refrigerator controllers and the like, in combination, a movable member, a loading spring biasing said member in one direction, a pressure responsive expansible wafer formed of opposed cupped elements

(Concluded on Page 15, Column 1)



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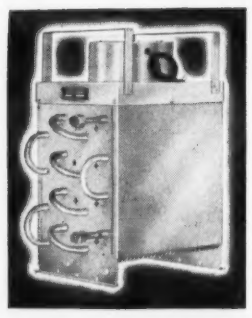
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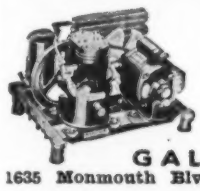
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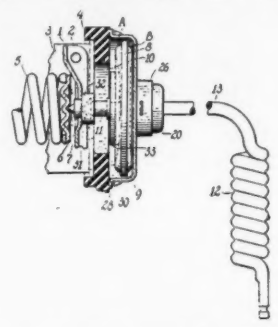
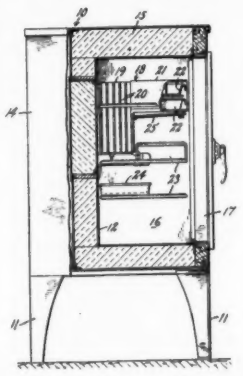
Patents (Cont.)

(Concluded from Page 14, Column 5)



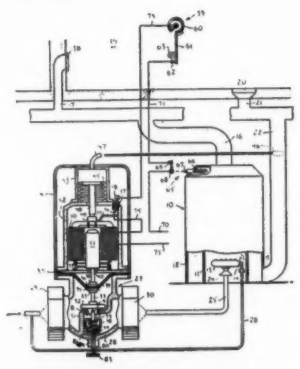
of thin sheet metal connected peripherally, a member interposed between said movable member and said wafer, and means to support all such parts in a cooperative relation.

2,245,737. REFRIGERATION. John Gudbrand Tandberg and Carl Damsberg, Stockholm, Sweden, assignors, by mesne assignments, to Servel, Inc., New York, N. Y., a corporation of Delaware. Application March 14, 1938, Serial No. 195,716. In Germany March 17, 1937. 3 Claims. (Cl. 62—1.)



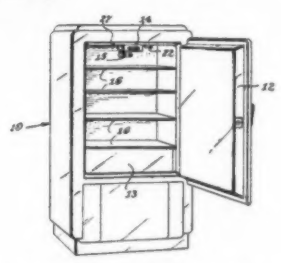
1. A refrigerator having a food storage compartment formed by thermally insulating walls, refrigeration apparatus including a cooling element having surfaces for cooling air in said compartment, means for conducting condensed moisture from said cooling element surfaces to disposal, and finely divided silver located so as to be contacted by said condensed moisture to render and keep the latter sterile while in said food storage compartment.

2,245,773. TEMPERATURE CONTROL SYSTEM. Arthur C. Grant, St. Paul, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application Dec. 7, 1938, Serial No. 244,405. 12 Claims. (Cl. 236—10.)



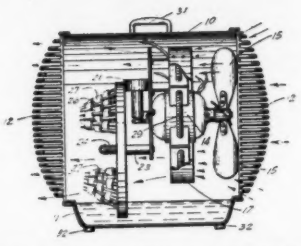
2. In a temperature control system, temperature changing means, means for supplying a temperature changing fluid to said temperature changing means, a valve biased to closed position and controlling the flow of such temperature changing fluid to said temperature changing means, an actuator for said valve, means responsive to a condition indicative of the demand for operation of said temperature changing means for causing said actuator to modulate said valve in accordance with the value of said condition, an electromagnetic connection between said actuator and said valve comprising an electromagnet and armature one of which is connected to said valve and the other of which is positioned by said actuator, and means for deenergizing said electromagnet to release said valve to closed position when the position to which said valve would be moved by said actuator would be too near to closed position to operate the temperature changing means properly.

2,245,837. BALLAST LAMP FOR STERILAMP. Ralph N. Stoddard and Arthur R. Dennington, East Orange, N. J., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Sept. 9, 1939, Serial No. 294,082. 7 Claims. (Cl. 201—63.)



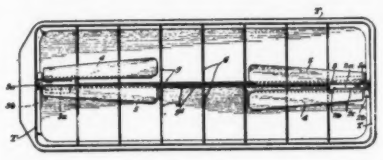
1. An enclosure for preserving articles subject to spoilage, a sterilizing discharge lamp therein, and an illuminating lamp having a filament connected in series with said discharge lamp, the resistance of said filament increasing with the increase of current therethrough, whereby the illuminating lamp acts as a ballast resistance for said discharge lamp, a closure member for an opening in said enclosure and means operated by said closure member for short-circuiting the sterilizing discharge lamp.

2,246,069. PORTABLE AIR CONDITIONER. Harry Schechtel and Marcus G. Wright, Denver, Col., assignor, by direct and mesne assignments, to Edward Schechtel, Denver, Col. Application Nov. 27, 1939, Serial No. 306,296. 2 Claims. (Cl. 261—30.)



1. An air conditioner comprising: a housing open at its extremities; a motor supported within said housing; a fan in said housing arranged to be driven by said motor to pass air through said housing; a water pan in the bottom of said housing; a humidifying wheel positioned laterally of said housing with its lower periphery immersed in said pan; segment-shaped flaps cut from the material of said wheel and inclined outward from one face thereof; absorbent material secured to said inclined flaps to absorb water from said pan; and means for driving said wheel from said motor.

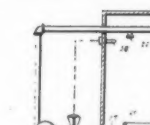
2,246,145. MECHANISM FOR BREAKING THE FROZEN CONNECTIONS OF ICE CUBES. Harry B. Rudd, Flushing, N. Y. Application March 31, 1938, Serial No. 199,062. 6 Claims. (Cl. 62—108.5.)



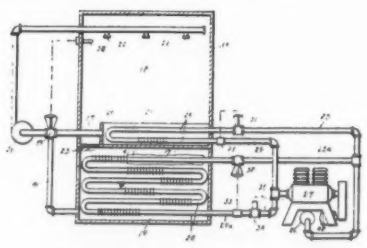
1. A grid structure adapted to be inserted into a tray for the production of ice cubes, said grid structure comprising a flexible supporting member formed from thin sheet material, spaced grid sections projecting from one side of said supporting member, ice cube kicker means disposed between pairs of adjacent grid sections, said kicker means comprising a movable kicker member formed from a partially cut-out section of said supporting member.

2,246,244. REFRIGERATION. John C. Consley, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application June 19, 1940, Serial No. 341,385. 10 Claims. (Cl. 62—115.)

1. A refrigerating circuit containing volatile refrigerant and comprising a plurality of compressors connected in parallel between a suction line and a discharge line, and a condenser, expansion valve and evaporator connected in the order stated between the discharge line and the suction line, said compressors being each of the type having a crankcase subject to compressor intake pressure and containing oil for lubricating the compressor; flow retarding means interposed between the suction line and each compressor intake and serving to cause crankcase pressure of any operating compressor to fall below suction line pressure as an incident to such operation.



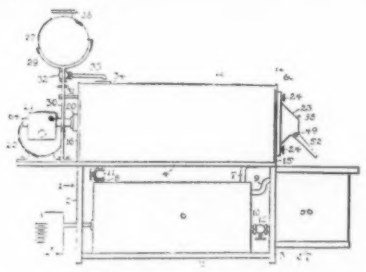
2,246,401. METHOD AND MEANS FOR PROVIDING REFRIGERATION. Robert W. Waterfill, East Orange, and Carlyle M. Ashley, Maplewood, N. J., assignors, by mesne assignments, to Carrier Corp., Newark, N. J., a corporation of Delaware. Application Oct. 3, 1933, Serial No. 691,928. 18 Claims. (Cl. 62—6.)



3. In an apparatus for cooling the atmosphere of an enclosure, a first refrigerant circuit including an evaporator normally receiving refrigerant supplied thereto at a relatively high suction pressure, a second refrigerant circuit including an evaporator normally receiving refrigerant supplied thereto at a relatively low suction pressure, a refrigerating machine, and means including a valve responsive to suction pressure for opening and closing said second refrigerant circuit in accordance with variations in heat load in said enclosure.

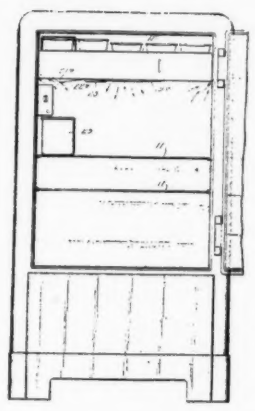
REISSUES

21,827. CONTINUOUS CONFECTION FREEZING APPARATUS. Charles Erickson and Erick Spellman, New York, N. Y. Original No. 2,191,344, dated Feb. 20, 1940, Serial No. 180,691, Dec. 20, 1937. Application for reissue Aug. 19, 1940, Serial No. 353,318. 21 Claims. (Cl. 62—114.)



1. An apparatus for continuously freezing ice creams, fluid custards, and the like, comprising a fixed hollow cylinder, means for exteriorly cooling said cylinder to freeze the contents thereof, said cylinder having one end closed and being provided in the upper portion of the same with a receiving cup connected with the interior of said cylinder and also having at the other end a removable discharging head, a feed shaft rotatably disposed within the cylinder and connected through the closed end of the latter with an exterior power drive.

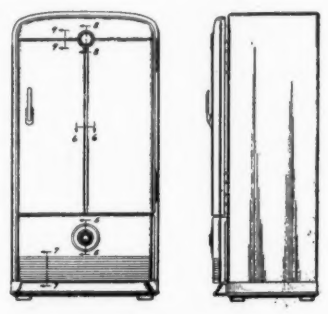
21,830. REFRIGERATING APPARATUS. Charles J. Gibson, Greenville, and Jens Touborg, Tecumseh, Mich., assignors to Gibson Electric Refrigerator Corp., Greenville, Mich., a corporation of Michigan. Original No. 2,158,718, dated May 16, 1939, Serial No. 180,248, Dec. 16, 1937. Application for reissue June 7, 1940, Serial No. 339,406. 10 Claims. (Cl. 62—103.)



1. In combination with a refrigerator having a food compartment: a horizontal surface type evaporator in the food compartment, said evaporator including an element in the form of a flat horizontally disposed plate forming a shelf in the food compartment, said plate having substantially the same cross-sectional area as the horizontal cross-sectional area of the food compartment.

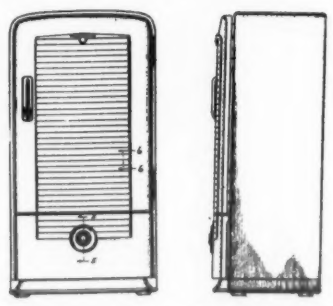
DESIGNS

127,828. DESIGN FOR A REFRIGERATOR CABINET. Raymond Loewy, New York, N. Y., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application March 12, 1941, Serial No. 99,523. Term of patent 14 years.



The ornamental design for a refrigerator cabinet, as shown.

127,843. DESIGN FOR A REFRIGERATOR CABINET. Raymond Loewy, New York, N. Y., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application March 12, 1941, Serial No. 99,524. Term of patent 14 years.



The ornamental design for a refrigerator cabinet, as shown.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Westinghouse Plans Further Expansion

MANSFIELD, Ohio — Expenditure of approximately one-half million dollars for enlargement of its Mansfield plant has been announced by the Westinghouse Electric & Mfg. Co. An expansion program totaling $1,500,000 has just been completed at the plant.

The new expansion will include a $240,000 addition to the plant's present vitreous enameling building, and a new enameling furnace to supplement the three furnaces now in operation.

A portion of the present enameling building is being replaced, and two floors are being added to a warehouse building.

The program also includes purchase of 23 real estate properties, totaling 6.2 acres, in the immediate vicinity of the plant. This property will be used for parking lots for employes, and will provide facilities for more than 900 cars.

Expansion of the plant will bring the total floor space of the Mansfield works to 1,332,900 sq. ft., says C. L. Van Derau, works manager.

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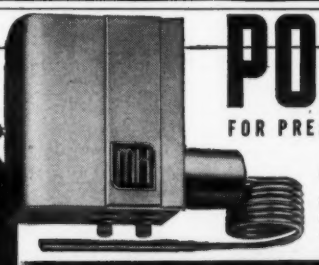
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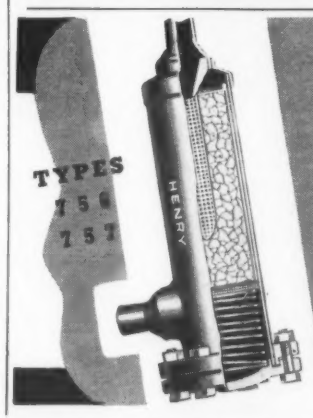
MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
2801 FOURTH AVENUE SOUTH MINNEAPOLIS MINNESOTA
REFRIGERATION Control



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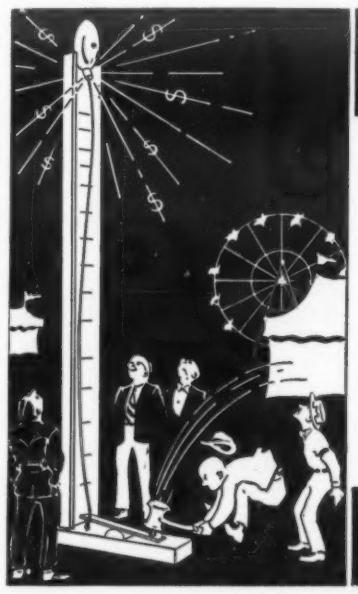
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RANCO 91 G 2

Cabinet of Plastics Planned By Ford

(Concluded from Page 1, Column 1)

70% cellulose fiber and 30% soybean resin binder—a much smaller than usual percentage of resin.

The cellulose portion consists of 50% southern slash pine fibre, 30% straw, 10% hemp, and 10% ramie. This latter is an Egyptian plant which thrives in many parts of America, a plant in which Mr. Ford is keenly interested.

Wheat and corn may be substituted for soybeans (thus taking care of some of our most troublesome agricultural surpluses). Mr. Ford has long advocated the theory that industry must use the products of the farm in order for our economy to progress.

ADVANTAGES CLAIMED

Ford men claim that the plastic cabinets should be superior to steel in many respects—particularly in weight, resistance to chipping and corrosion, and in heat refraction. Sheets of this material will absorb a blow 10 times as great as steel without denting.

At least one electric refrigerator manufacturer has been field-testing plastic cabinets for several months, and others are known to be experimenting with the idea. Hence Mr. Ford will surely have company when he brings out his plastic refrigerator.

Another Ford-promoted product which his laboratory men may study for adaptation to refrigerators is soybean wool, which has interesting possibilities from the cost standpoint.

One of Mr. Ford's most treasured possessions is a suit of clothes made of 75% sheep's wool and 25% soybean "wool."

"The soybean wool is the only plant or vegetable protein fibre thus far developed," he explained. "All other protein fibres are of animal origin. You can plant as much soybean as you want. You are reasonably sure of a good crop in virtually all agricultural parts of the world. We have a proved method of chemical and mechanical processing so it comes out exactly the same kind of wool always, and we can produce it in industrial quantities much cheaper than the same amount of sheep wool."

The soybean wool can be used in upholstery or it can be sprayed with rubber to make a springy and durable padding for automobile seats. Far from curtailing the sale of sheep's wool, the new protein fibre wool will create a new market for the natural product, Mr. Ford said, because the two must be used together and the low cost will bring wide new uses.

OUTLET FOR FARM GOODS

Discussing his determination to find the broadest possible outlet in industry for farm products, Mr. Ford has said: "The major thing, after all, is not soybeans. We have only started our program with beans. Every bit of vegetation on this earth may—and some day will—be utilized by industry and for wholesome daily living. We are experimenting with various needs. There is something in each of them that may be utilized, given the right laboratory analysis and the proper processing.

"For example, the tensile strength of our soybean plastics now is about one-half that of steel. But there is great tensile strength in the fibres of the ramie plant which we add in larger properties to the soybean plastic where the latter needs greater strength."

The Ford Motor Co. uses millions of pounds of soybean and other plastic materials every year, but the motor maker is convinced that immense new advances in the industrial conversion of the products of the farm are immediately ahead. Pointing to the chemical research and experimental laboratory recently, he said with enthusiasm:

"I wouldn't be surprised if this laboratory comes to be the most important building of our entire plant. Not just for us either, but for farmers everywhere. I think enduring peace and the real prosperity of the nation can be insured only by finding new and better ways to use the soil, and that's what we are learning here in this laboratory."

The development is especially timely because of the possible curtailment of steel supplies to "non-defense" industries.

Refrigerator Price Raises Attacked By Henderson

(Concluded from Page 1, Column 1)

tinue in this and other industries, the inevitable result will be inflation and demoralization not only in your industry but throughout the economic system.

"Pending a determination as to the justification of your recent increase, we request that you make no additional advances in prices until you have discussed the matter with us. We shall be glad to arrange for such discussions at your convenience.

"Sincerely,
"LEON HENDERSON,
"Administrator."

In a letter sent at the same time to 47 of the largest manufacturers of furniture in the country, the OPACS head requested not only a halt in price rises but also in the "open" method of quoting prices in this field, suggesting that it was better for the manufacturer to "refuse any customer's order which he is not sure of his ability to fill, rather than to resort to the open-price method."

While recent refrigerator price increases may be causing some concern in the minds of OPACS officials, the fact is that this year's advances have actually had the effect of bringing prices back to about the same levels as those of 1940, before onset of the price competition that drove prices down to unprecedented low levels.

PRICES STILL LOW

When last year's models originally were introduced, it will be recalled, the 6-foot "specials" in most lines were listed at $129.95, but within a month were down as low as $114.95 ($112.95 in some sections) as a result of competitive moves by major manufacturers.

Most 1941 lines opened at $114.95 to $119.95 as the "leader" price, with more early jockeying on the part of leading firms. Since then, about three price boosts have been made, amounting to from $10 to $15 in most instances, so that the "specials" in most lines are back again to the $129.95 level, and other models near their opening 1940 marks as well.

This action on the part of manufacturers, to be sure, was not greeted with cheers by the majority of retailers. But merchandise has been so hard to get, and business in general has been so good, that little direct criticism has been voiced by retailers in general.

Sharp criticism of what he called "the entirely unjustified price increases on electric refrigerators," however, was voiced by E. F. Jeffe, vice president of Consolidated Edison Co. of New York, in a recent speech before Queens Appliance Dealers Association.

Pointing out that there had been no corresponding rise in gas refrigerator prices, Mr. Jeffe declared that "everyone knows manufacturers of refrigerators buy their raw materials long ahead of time, and that a big portion of 1941 boxes were made up in the latter part of 1940, long before the present emergency."

FURNITURE MEN FIGHT

Contrary to Mr. Henderson's request, however, a number of furniture manufacturers last week announced additional price increases on their products, and said they "had no intention of rescinding them." Costs have risen substantially due to increased costs of materials and labor, it was pointed out, and with the summer furniture markets at hand, it is not possible for manufacturers to confer with the OPACS before making up their schedules.

Emergency In Southeast Power Declared

(Concluded from Page 1, Column 2)

sippi, and Florida. The declaration gave the commission a basis for invoking emergency powers provided by the Federal Power Act.

Under these powers, the FPC can order an integration of power facilities to alleviate a power shortage. The initial interconnections will be announced early this week, the commission stated.

Kelvinator Promotes Pierce & Lawson

(Concluded from Page 1, Column 3)

manager of the Kelvinator division.

General sales manager of the Nash Motors division is W. A. Blees, who has been connected with Nash for several years.

Other appointments in the Kelvinator division as announced by Mr. Pierce, include that of E. Ray Legg, former western sales manager, as successor to Mr. Lawson as sales manager of household appliances, and that of Don Rulo, who has been a member of the Kelvinator division executive sales staff for some time, to succeed Mr. Legg as western sales manager.

Mr. Pierce came to Nash-Kelvinator in 1939 from Frigidaire, where he headed up sales. He began his selling career in his home city of Philadelphia as a retail salesman, and worked his way to the head of the Philadelphia sales organization.

His work commanded attention and he was brought to national headquarters of Frigidaire at Dayton, Ohio, in 1932 and soon was made manager of the entire household sales division of Frigidaire. He retained his post until he joined the Nash-Kelvinator organization.

Under Mr. Pierce's selling direction, sales of the Kelvinator division of the corporation showed tremendous gains, and today Kelvinator household refrigerator sales are approximately four times as great as they were when he assumed command of the sales organization.

424,636 Household Refrigerator Units Sold By 12 Nema Firms During May

The following 12 companies reported sales to the Refrigeration Division of the National Electrical Manufacturers Association (Nema) on household electric refrigerators for May, 1941:

Crosley Corp., Edison General Electric Appliance Co., Inc., Frigidaire Div. General Motors Corp., Gale Products Div. Outboard Marine & Mfg. Co., General Electric Co., Gibson Electric Refrigerator Co. Kelvinator Div. Nash-Kelvinator Corp., Leonard Div. Nash-Kelvinator Corp., Norge Div. Borg-Warner Corp., Stewart-Warner Corp., Sunbeam Electric Mfg. Co., and Westinghouse Electric & Mfg. Co.

The sales of the reporting companies include units manufactured for the following concerns: Montgomery Ward & Co., Potter Refrigeration Corp., and Sears, Roebuck & Co.

	SALES FOR MAY, 1941			
	Domestic	Canadian	Other Foreign	Total World
Lacquer (Ext.) Cabinets Complete				
1. Less than 4 cu. ft.	2,533	262	324	3,119
2. 4 to 4.99 cu. ft.	12,979	1,010	1,854	15,843
3. 5 to 5.99 cu. ft.	6,511	192	419	7,122
4. 6 to 6.99 cu. ft.	291,941	6,529	6,762	305,232
5. 7 to 7.99 cu. ft.	28,382†	...	403	28,785
6. 8 to 8.99 cu. ft.	24,342	85	757	25,184
7. 9 to 12.99 cu. ft.	6,164	25	267	6,456
8. 13 cu. ft. and up	28	...	5	33
9. Total Lacquer	372,880	8,103	10,791	391,774
Porcelain (Ext.) Cabinets Complete				
10. Less than 5 cu. ft.	...	...	...	...
11. 5 to 5.99 cu. ft.	6	1	5	12
12. 6 to 6.99 cu. ft.	24,095	1	454	24,550
13. 7 to 7.99 cu. ft.	2,739	...	39	2,778
14. 8 to 8.99 cu. ft.	1,049	1	39	1,089
15. 9 to 12.99 cu. ft.	2,001	...	144	2,145
16. 13 cu. ft. and up	569	...	37	606
17. Total Porcelain	30,459	3	718	31,180
18. Total—Lines 9 and 17	403,339	8,106	11,509	422,954
19. Separate Systems, ¼ Hp. or Less	...	...	1,682	1,682
20. Total Household Equipment	403,339	8,106	13,191	424,636
Value Index*	147.0	171.0	110.0	146.0

*Based on weighted sales for 1934, 1935, and 1936. †Includes sales and credits.

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